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SOME POINTS IN DIAGNOSIS AND TREATMENT.[1]

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THE title of this paper was chosen because it was felt that, in a mixed audience such as is present here tonight, a brief discussion on a number of subjects would be almost certain to include something of interest to all of you. The conditions which will be mentioned will not be described in full, but will be discussed more from the standpoint of their clinical recognition and treatment.

The prevailing custom in medical addresses is to emphasize unduly recent advances and modern methods. A knowledge of these is often helpful, and sometimes necessary, for accurate diagnosis or appropriate treatment, but they must not be allowed to overweigh the importance of a carefully taken history, a thorough physical examination and a well balanced perspective as to the relative worth of phenomena. These can be gained only by a sound knowledge of fundamental principles, combined with careful and accurate clinical observation. The practice of medicine is hundreds of years old, and we are a little inclined to over-estimate recent contributions to medical knowledge and not to show due reverence to the past masters of our profession. We smile at some of their methods of treatment and their quaint prescriptions, but is it not possible that future generations will think it strange that in the present century venesection has been more or less replaced by tonsillectomy? And their wonder will be all the more increased when they discover that for some years removal of half the tonsil was practised with perfect satisfaction as to the result, whereas at the present time half a tonsil is said to be worse than a whole one.

[1] Read at a meeting of the Victorian Branch of the British Medical Association on May 20, 1933.

In a majority of cases correct diagnosis still depends largely on a carefully taken history, followed by a thorough physical examination. A true account of the patient's symptoms is often most difficult to obtain, may demand much skill and patience and be very time-consuming. It is perhaps for these reasons that it does not always receive the attention due to it. Symptoms often precede physical signs, and disease may be even far advanced without any definite signs being present, for example, in some cases of *angina pectoris* and pulmonary tuberculosis. In many diseases the history at all stages furnishes more important information than any other method of examination. In cases of suspected duodenal ulcer, when the history and the X ray findings are at variance, the former is the more reliable. Migraine is a very common disease. It presents no physical signs. If an accurate history be taken, it is easy to diagnose, yet it is frequently overlooked. Speaking generally, if a correct diagnosis be made, no great difficulties will be encountered in deciding on the appropriate treatment. If a drug or method of treatment be really effective, its value as a rule soon becomes established. If a method of treatment has been thoroughly tried in experienced hands and is still subject to difference of opinion, the probability is that it has no great value. When a powerful drug or a drastic mode of treatment is in question, and its administration of doubtful value, it is better omitted, for if it does no good the probabilities are that it will do harm.

It is exceedingly difficult to assess the value of a drug, particularly in chronic diseases which show a marked variation in their natural course, for example, tuberculosis and syphilis, and also in acute diseases like pneumonia, which are naturally self-limited. Many years of patient and accurate observation may be necessary before an opinion can be arrived at, and even then it may be difficult. For a long time the controversy waged as to whether mercury was or was not beneficial in the treatment of syphilis, and to within quite recent times its place was not firmly established. A century ago patients with pneumonia were sweated and purged and had venesection done; then they were overdosed with antimony and later still with alcohol. At the present time digitalis is given almost as a routine measure, although we have no definite proof as to its value. Quite recently "Coramine" has been used extensively.

This difficulty in assessing the value of drugs and other remedies is one of the reasons why fads and fashions in medicine have been, and possibly still are, so prevalent. Not so long ago a physician would have been almost liable to an action for malpractice if he had not performed venesection on a patient with pneumonia. Clitorectomy used to be fashionable treatment for hysteria and neurasthenia. Now we follow up the same line of thought by removing the subconscious repressed sex complexes. Perkins rods had their day, and so did tar water.

Neurasthenia from time to time has been, and still is, ascribed to septic foci, errors in refraction, movable kidney, uterine displacement, bowel infection, avitaminosis, endocrine imbalance, sympathetic disturbance *et cetera*, and the treatment has varied accordingly from the administration of sour milk to the removal of the colon. It is not the significance of these factors which is under criticism, but the undue magnification and extension of their field of importance.

Fads do frequently cure while they are still the rage; hence Trousseau's famous advice to a patient "to take this while it is still curing". Such remedies act largely through their psychic effect; and it is often difficult to estimate how much of the improvement gained is due to the physical and how much to the psychic effect of the remedies used. The more modern and scientific a treatment appears, the more likely is it to have a psychic effect.

Until medicine becomes more of a science and less of an art, so long will fads and fashions come, have their day, and be relegated to oblivion. The successful practitioner is still too often an artist rather than a scientist with a good knowledge of psychology. Every new treatment must be critically examined and thoroughly tested before being finally accepted. This point of view was well expressed by a certain Dr. Harris of the eighteenth century in the following words:

> For some different modes and customs, sometimes perhaps better, sometimes worse, come into fashion and go out again in physic as in dress and the common herd of physicians too easily give credit to the new leaders, till that faithful mistress experience at last shows them the safer ways of truth.

Of the various drugs in the pharmacopœia, not to mention the numerous preparations so freely and attractively advertised by commercial houses, comparatively few are really effective in the treatment of disease. An eminent surgeon, however, rather overstated the case when he announced: "All you physicians do is that you either get a patient's bowels open or you don't." There is, however, a large number of drugs which from time to time are reported by observers of some standing to be of value and which we feel more or less bound to try. Unfortunately we are too often disappointed and as a result are inclined to view all new drugs with suspicion and scepticism. It is most difficult to assess the value of any drug, even after prolonged and careful clinical observation. Many of us are apt to be too illogical in this matter and to draw conclusions from insufficient data. There is much wisdom in Pope's oft-quoted couplet:

> Be not the first by whom the new is tried
> Nor yet the last to lay the old aside.

We can improve our efficiency as practitioners of medicine much more by concentrating on accuracy of diagnosis than by experimenting unduly with fashionable modes of treatment. All too often diagnostic skill is inversely proportional to unwarranted therapeutic optimism. If a correct diagnosis be made, the treatment will usually not be very far

astray. After these few preliminary remarks a few observations on diagnosis and treatment of individual conditions will now be made.

Chlorosis.

It is customary to state that chlorosis, which was at one time admittedly a common disease, is now rare. Marked chlorosis is rare, but minor degrees of the condition are still common and are frequently overlooked. This is due to three main causes: first, because it is thought to be so rare; second, because a patient does not appear to be obviously anæmic until the hæmoglobin value gets below about 65%; and thirdly, in this age of septic foci attention is directed more to the condition of the teeth and the tonsils, and the possibility of a blood disease is not considered. Many young women have been seen who have had one or more septic foci removed without any material improvement and who have had mild degrees of chlorosis with a satisfactory response to iron and sulphate of magnesia. Quite marked cases of chlorosis are still occasionally seen, particularly in young women who have recently come to the city after having lived most of their lives in country districts. In the ordinary inspection of the patient the colour of the palms of the hands is often a more reliable guide as to the probable presence of anæmia than the colour of the mucous membranes and face.

Although marked chlorosis is now rare, a somewhat similar type of anæmia, occurring particularly in middle-aged females, is apparently becoming much commoner, or at any rate is much more frequently recognized. It is known under the rather unsatisfactory name of idiopathic secondary anæmia and is characterized by the frequent presence of glossitis and achlorhydria, a blood picture of the secondary type with low colour index and microcytosis and a facial appearance somewhat resembling that of pernicious anæmia.

It was first described in 1913 by Faber, but his publication seems to have attracted very little attention. Since then many others have written on the subject and a very comprehensive account of it was given by Witts in 1930.

As its name implies, very little is known about its ætiology. The achlorhydria has been cited as a cause, but is not present in all cases. In this connexion it is interesting to recall that Mettier and Minot have shown that "iron is more potent for blood production when absorbed from an acid than an alkaline medium within the gastro-intestinal tract". There are no evidences of increased blood destruction and it is therefore assumed that for some unknown cause there is a deficient formation of hæmoglobin.

If one is aware that such a condition exists, then its recognition is usually not difficult. It occurs particularly in females between the ages of thirty and fifty, although it is also seen in the male sex. The anæmia may be quite severe and is frankly of the secondary type, with low colour index and no macrocytosis, the average diameter of the red cells being less than normal. The red cells show some anisocytosis and poikilocytosis, which are more or less proportional to the severity of the anæmia. A leucopenia is often present, but the differential count presents no constant abnormality. The spleen is not enlarged. The glossitis, the achlorhydria and the absence of any apparent cause for the anæmia naturally make one think of pernicious anæmia, but the low colour index, the microcytosis, the normal number of platelets, and the absence of relative lymphocytosis or any evidences of hæmolysis are usually quite sufficient for a differential diagnosis.

As far as treatment is concerned, the only really important point is to administer iron in sufficient doses. Until the hæmoglobin value is restored to normal, and this usually takes several weeks, 2·4 to 3·6 grammes (forty to sixty grains) of iron should be given daily. Blaud's pill is an effective and inexpensive preparation, and has been found to be just as satisfactory as more expensive iron compounds. If achlorhydria be present, dilute hydrochloric acid is also prescribed, but although it may improve any digestive symptoms that may be present, it does not seem to hasten very much the improvement in the blood picture. In most cases, too, the achlorhydria persists even after the hæmoglobin value has been restored to normal. Relapse is very prone to occur unless iron in small doses, for example, Blaud's pill, 0·3 gramme (five grains), is given three times a day more or less indefinitely. If this dose is not sufficient to maintain a normal hæmoglobin figure, then it may have to be temporarily increased from time to time. Liver is often prescribed in these cases, but usually does not hasten improvement. Occasionally, however, particularly when liver itself, and not liver extract, is used, it does seem to be of some value.

Primary Sero-Fibrinous Pleural Effusion.

The management of the so-called primary or idiopathic sero-fibrinous pleural effusion is a problem which frequently confronts us. Before considering the actual treatment, the principles which determine this will be briefly considered. In a large percentage of cases these effusions are of tuberculous origin. The amount of disease in the underlying lung and pleura is usually not extensive and may not be demonstrable. Our main concern should be to get the lung soundly healed. Even after the fluid has disappeared the patient should be considered as being tuberculous and receive appropriate treatment. When this is done there is a much lower incidence of subsequent manifest tuberculosis. Thus in 89 patients with idiopathic pleurisy, treated as being tuberculous and followed through from four to twelve years, 79 were well and at work, seven had died of pulmonary tuberculosis, and three were suffering from clinical tuberculosis. When patients have returned to work shortly after the effusion has been absorbed, the ultimate results have not been nearly so favourable as these, approximately one-third dying of pulmonary tuberculosis.

The pleural exudate seems to exert a beneficial influence on the underlying lung disease. This is partly due to compression and resting of the lung, and is, of course, the principle underlying the pneumothorax treatment of pulmonary tuberculosis. There is also some evidence that a sterile exudate exerts a healing effect quite apart from the purely mechanical action of the fluid. It has been suggested that some biological process is at work inducing auto-immunization. Acting on this assumption, subcutaneous injections of fluid withdrawn from the chest have been advised and practised by Fishberg and others. The patient is probably not absorbing toxins from the fluid, as evidenced by the fact that the temperature often falls when even a large amount of fluid is still in the chest, and sometimes after tapping there is a rise and not a fall in temperature.

The rapid withdrawal of large amounts of fluid from the chest is not free from risk. Sudden collapse, rapid fall in blood pressure, acute pulmonary œdema, or a marked increase in the underlying lung disease may result. In the withdrawal of fluid there is a fairly constant fall in blood pressure, the average in nineteen observations being twenty millimetres. Evacuation of large amounts of fluid, rapid withdrawal, long duration of the effusion, and senile changes in the heart and blood vessels increase the fall. The aspiration of large amounts of fluid seems to stimulate further exudation, while the removal of small amounts may hasten spontaneous absorption.

A massive effusion in a patient with a mobile mediastinum may cause increased pressure not only on the same side of the chest, but on the opposite side as well. This may lead to considerable respiratory and cardiac distress, with rapid pulse, increase in respiration rate, cyanosis and even sudden death. Hence in these cases interference is indicated.

If there is active disease in the opposite lung, it may extend if the sound lung be compressed. This is well known in patients treated by artificial pneumothorax.

If there is active demonstrable disease in the underlying lung, and the fluid be allowed to absorb naturally, any subsequent pneumothorax therapy will usually be impossible.

Bearing these principles in mind, the treatment of each individual case can be correctly determined. The general rule is that unless some special indication arises, the fluid should be left alone and allowed to absorb naturally. A small portion may, of course, be removed for microscopic examination. It is better not to do this during the first few days of the effusion, as during this period it is more likely to upset the patient.

If there is active disease which is spreading in the opposite lung, one is forced to aspirate fluid to limit this spread. A large amount of fluid should not be removed at one sitting—not more than about 450 cubic centimetres (fifteen ounces).

In massive effusions, particularly if there are symptoms of respiratory or cardiac distress, interference is indicated. In these there is undoubtedly a risk of sudden death if nothing is done, and at autopsy the actual cause of death may not be evident. Pulmonary thrombosis or embolism, cerebral embolism or acute pulmonary œdema have been found in some cases. A small amount of fluid should be removed, about 450 cubic centimetres (fifteen ounces) and this may be repeated if necessary.

If, after about five weeks, the fluid shows no signs of absorbing, and the temperature is still elevated, this usually means that there is definite active disease in the underlying lung. A small amount of fluid may be removed and if, after this, the temperature does not settle down, the remainder should be aspirated and replaced by air. An alternative procedure is to remove the fluid at once and to replace it by air. In these cases it will probably be wise to continue pneumothorax therapy on account of the underlying lung disease. As the lung expands, it should be carefully examined both clinically and radiologically for any signs of tuberculous disease, and if this is present in sufficient degree, pneumothorax therapy should be continued. In any case when there is active demonstrable disease on the same side, aspiration may be done, provided that air replacement is undertaken. Pneumothorax therapy can then be continued. Routine air replacement is not advocated. A small lesion in the underlying lung is probably present in many cases when none can be demonstrated, but these patients have a good outlook if treated thoroughly on conservative lines.

With bilateral effusions one side should be completely evacuated, either the healthy side or the side having the least disease, if this can be determined.

Slow absorption, if not accompanied by fever, is not an indication for interference. There is little or no danger of the fluid becoming purulent or of the lung failing to expand.

If the above indications are followed, it will be found that the majority of primary sero-fibrinous effusions will absorb in five to seven weeks' time without aspiration. Some effusions, however, take a much longer time to absorb.

Treatment after the effusion has subsided should be undertaken on the same lines as in early pulmonary tuberculosis. Several months' rest in bed should be advised, with the usual hygienic and tonic measures, and after this a further period of several months' restricted activity before returning to work.

Myxœdema.

Mild and sometimes even severe grades of myxœdema are often overlooked, not so much from lack of knowledge of its clinical features, but because it is one of the diseases which are frequently not thought of. Also in these days of intensive investigation ordinary inspection of the patient does not take such a prominent place in the examination as it used to take. It is most frequent in

females at the time of the menopause. Increase in weight at this time, accompanied by malaise, lack of energy, and a slowing of the mental processes should lead to a suspicion of myxœdema. The appearance of the patient is often characteristic. The features are coarse, the forehead is wrinkled, the lips are thick and everted, the eyelids are puffy, the skin is thick, dry and inclined to be scaly, the complexion is sallow and often accompanied by a malar flush, and the hands of the so-called spade-like type with sausage-shaped fingers. Failure of perspiration and falling out of hair, particularly along the margins of the scalp and the outer parts of the eyebrows, are common features. Anæmia of a slight and sometimes a severe grade is occasionally present, and the general appearance of the patient may present a superficial resemblance to that seen in pernicious anæmia. The pulse is slow and the temperature subnormal, with resulting sensitiveness to cold. Mental slowness is common and occasionally definite psychoses may occur. Owing to the thickening in the vocal cords, the speech may be thick and leathery. Constipation is usual. Arteriosclerosis is often present, but the blood pressure, although usually somewhat elevated, may be subnormal. Localized thickenings may be seen above the clavicles, the so-called supraclavicular pads, and also sometimes in other parts of the body.

Incomplete forms, showing only a few of the features mentioned, are commoner than the fully developed picture.

The diagnosis can be confirmed most readily by the response to thyreoid medication. Some patients with myxœdema are said to be sensitive to thyreoid, and it is therefore advised that treatment be commenced with small doses of 0·015 gramme (a quarter of a grain) daily of the extract. I have not so far observed this sensitivity, and usually commence treatment with 0·03 gramme (half a grain) taken three times a day. This is gradually increased to 0·06 gramme (one grain) taken three or four times a day. Larger doses than these are usually not necessary, but no rigid rule can be laid down, and sometimes the optimum therapeutic result may be obtained with as much as 0·18 or 0·24 gramme (three or four grains) taken three times a day. If no response is obtained and there is every reason to believe that the diagnosis is correct, then a different thyreoid preparation should be tried. The dosage has to be regulated very largely by clinical observation, a careful watch being kept for any signs of toxicity. The patient should be regularly weighed, the resting pulse rate recorded, and the presence or absence of any tremor noted.

If laboratory facilities be available, the basal metabolic rate and the level of the blood cholesterol are valuable aids to diagnosis and in regulating the proper thyreoid dosage.

Chronic Subdural Hæmatoma.

Chronic subdural hæmatoma, although not a very common condition, presents a fairly well marked and characteristic clinical picture. The results of surgical treatment are on the whole good. The hæmorrhage is situated over the cerebral hemispheres, beneath the *dura mater*, and is surrounded by a distinct membrane, which appears to be derived from coagulated blood and shows some vascularization from the periphery, particularly from the dural side. The main mass of the blood is usually situated beneath the frontal and parietal bones, its transverse extent being much less than its antero-posterior, which may extend from the frontal to the occipital pole.

According to Trotter, the bleeding is venous in origin, arising from small cerebral veins passing from the brain to tributaries of the superior longitudinal sinus in the dura. These veins are fixed at one end by the rigid dura, whilst the other end is in association with the comparatively mobile hemisphere. Thus a sharp blow, particularly on the front or back of the head, might cause some antero-posterior displacement of the hemispheres without a corresponding movement in the dura. This might cause a tearing of the small veins passing from the brain to the dura. If this explanation be the correct one, it is obvious that the bleeding may be bilateral and not necessarily on the side of the injury, and this is actually found to be the case. The common clinical features are well illustrated by the following example.

A male, aged thirty-six years, was first seen on March 6, 1933. Seven weeks previously he had been involved in a motor accident and had received a fairly severe blow over the right malar bone. There had been no loss of consciousness and he had returned to work two days later. He had remained well until seven days ago, when he began to complain of headache, at first mild, but later very severe and varying in intensity. In the past twenty-four hours he had become slightly drowsy.

On examination he was quite conscious and answered questions slowly, but quite rationally. The respiratory rate was normal, but there was considerable increase in the range of the respiratory movements. The right superficial abdominal reflex was absent and the right plantar reflex extensor in type. X ray examination revealed a fracture of the right malar bone. The cerebro-spinal fluid was clear, under somewhat increased pressure, but showed no increase in cells or protein, and did not react to the Wassermann test. Following lumbar puncture the headache improved and the patient said that he felt well and wished to return home. The headache, however, reappeared and was twice relieved by lumbar puncture, only to recur again on each occasion.

On March 14, 1933, he was again seen in consultation. He was again complaining of severe headache, and his cerebration was rather slow. The right superficial abdominal reflex was absent, the right plantar reflex was extensor in type, and there was slight paresis of the right lower limb, but not of the upper limb or face. Papilloedema of about three diopters was present in both eyes. At operation a large subdural hæmatoma was found over the left hemisphere, beneath the frontal and parietal bones. Recovery was complete and uneventful.

The causal injury may not be severe, but in most cases is considerable. In a few no history of injury can be elicited even after operation, as in a patient seen recently and successfully operated on.

After the injury there is usually an interval of several days to several weeks or even months before any definite symptoms are noticed. Headache is usually the first symptom. It may be severe and even agonizing, and is subject to considerable spon-

taneous variation. Sooner or later mental changes develop. A slight degree of drowsiness, slow cerebration, forgetfulness and absent-mindedness are the commonest. Symptoms of cerebral irritation are unusual, although a patient who is drowsy by day may become restless at night. The breathing may resemble that seen in ordinary sleep, although the patient is at the time quite conscious.

Symptoms of this character may last for several weeks, with very little alteration apart from their variability, and then the patient rapidly becomes worse, the drowsiness deepening into coma. The depth of the coma varies, but usually some response can be obtained on painful stimulation. "The most characteristic feature of the coma is its spontaneous variability. There is no other condition in which this is so clear and striking a feature" (Trotter).

Focal symptoms are characteristically slight, elusive and variable. Evidences of pressure on the motor cortex are the commonest, with a plantar extensor reflex and absent superficial abdominal reflex on the opposite side. A definite hemiplegia is uncommon, but there may be a hemiparesis. In one case a slight facial paresis was the only definite localizing sign. Twitching of the limbs or face on the side opposite to the hæmorrhage is sometimes seen, but a definite Jacksonian fit is rare. A unilateral lesion may cause bilateral signs, but more often a bilateral lesion gives symptoms on one side only. Trotter states that:

> A single observation of a definite physical sign pointing to the second side, even if the sign is only transient, should be enough to suggest a diagnosis of a bilateral lesion.

If there is inequality of the pupils, the hæmorrhage is usually on the side of the largest pupil. Other localizing signs, such as hemianopia, aphasia, and oculomotor disturbances, are sometimes seen. Optic neuritis may be present and tends to be more marked on the side of the lesion. There may be neck stiffness and a positive Kernig's sign. The cerebro-spinal fluid is usually under increased pressure, often slightly yellow in colour, and shows a slight increase in cells of the mononuclear type. It may, however, be quite clear and under normal pressure. It is occasionally blood-tinged.

It is doubtful if spontaneous recovery ever occurs, but the condition may cease to progress, in which case a diagnosis of dementia would probably be made.

Lumbar puncture may temporarily relieve the symptoms and even some of the physical signs. Operation is the only satisfactory treatment. In unilateral lesions the blood should be evacuated through an opening in the temporal fossa. An opening about 3·75 centimetres (one and a half inches) in diameter is probably quite sufficient, but many operators prefer to turn down an osteoplastic flap. If there is any suspicion of a bilateral hæmorrhage, both sides should be opened at the one operation. If one side only be opened at the first operation, the hæmorrhage on the opposite side may rapidly increase in size.

HYOSCINE IN LABOUR.[1]

By S. F. SUTHERLAND, M.B., B.S. (Melbourne),
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IT was with a certain amount of trepidation that I accepted Dr. Bennett's invitation to make the attempt of reading a paper at this meeting. The limited field offered to a general practitioner in a small one-man town who has only been practising for some four years, and lack of a field of reference were good reasons for this. Interesting cases are few and far between and are usually passed on for a more competent opinion as to diagnosis and treatment.

This being so, it became a matter of choosing a subject which might lend itself to discussion and at the same time one with which the general practitioner is constantly in contact, so I decided to give a brief *résumé* of the history and use of hyoscine in labour, not from my own experience with the drug so much as to find out what others think of it and of its possibilities or limitations. To my mind the use of some form of analgesia or amnesia during labour is becoming a necessity, and patients are beginning to expect it, and rightly so. The long-drawn-out nine months of pregnancy are bad enough for any woman without in addition having to undergo the agony of labour aided only by a little chloroform very late in the second stage.

The Drug.

I will begin with an account of the drug itself. Most of this information has been drawn from Sajou's "Cyclopedia of Practical Medicine".

Hyoscine is an alkaloid obtained from various plants of the family *Solanaceæ*, including *Atropa belladonna*, *Datura stramonium*, *Hyoscyamus niger* and *Scopola carniolica*. The last mentioned grows in the Eastern Alps and Carpathians. A similar plant is found in Japan, *Scapola japonica*, and contains the same principles as the European scopola. Though discovered, the one in hyoscyamus and the other in scopola, hyoscine and scopolamine are identical chemically. As most of the drug is obtained from scopola rather than from hyoscyamus, the term scopolamine is often given preference, and in many European countries it is the only appellation used.

From the standpoint of the United States Pharmacopœia, scopolamine and hyoscine are identical in all respects. A slight distinction is sometimes made between the two in respect to their optical properties, that is, scopolamine being completely lævorotatory.

Its Physiological Action.

Nervous System.—Hyoscine, like atropine, produces distinct effects on both the central and peripheral nervous structures. Its central effects differ in quality, however, from those of atropine, con-

[1] Read at a meeting of the Victorian Branch of the British Medical Association on May 20, 1933.

sisting chiefly of a pronounced depression of the psychic and motor centres of the brain, the result being an hypnotic effect, which passes, if the dose be large enough, into narcosis. The electrical excitability of the brain is reduced.

The human subject to whom hyoscine has been administered becomes quiet and sluggish because of early depression of the motor centres, and soon falls asleep. At times these effects appear suddenly after a short period of latency, and their intensity may prove alarming to nearby persons.

Occasionally sleep is preceded by a short period of excitement, which may either represent an attenuated manifestation in hyoscine of the delirifacient action of atropine or be due to the presence of the highly toxic alkaloid atropine as an impurity. (To test, add a little dilute potassium permanganate solution to a solution of the hyoscine; the violet changes to yellow-brown.) The peripheral nervous effects of hyoscine are essentially those of atropine, that is, depression or paralysis of the terminals of the vago-sacral autonomic system and of the secretory nerves. The effects of atropine on the pupils, involuntary muscles in general, and secretions are reproduced, but are not particularly noticed in the hypnotic doses used.

Circulation.—Ordinarily no cardiac acceleration is produced by hyoscine, and it has no stimulating effect on the vasomotor centre.

Respiration.—Respiration is not affected, except to be depressed with very large doses.

Hyoscine is readily absorbed from mucous membranes. It is more rapidly destroyed in the system or excreted than atropine, and its effects are of correspondingly shorter duration.

Untoward Effects and Poisoning.

The dose of hyoscine borne without unpleasant symptoms seems to vary considerably in different persons. The dose ordinarily toxic lies between 0·65 and 2·2 milligrammes (one-hundredth to one-thirtieth of a grain). Even therapeutic doses at times produce alarming effects. Thus cases of collapse from 0·65 milligramme (one-hundredth of a grain) have been reported with pronounced muscular weakness, flushing of the face, a hard, rapid pulse, noisy, rapid breathing, twitching of the hands and a cool perspiration.

Fatal results from hyoscine are rare. Recoveries from 8·0 milligrammes (one-eighth of a grain) and even 32 milligrammes (half a grain) have been reported. Martindale reports the case of a boy of five years who swallowed several 0·65 milligramme (one one-hundredth of a grain) tablets of hyoscine hydrobromide and who was unconscious on the doctor's arrival. Injection of 0·016 gramme (one-quarter of a grain) of pilocarpine produced improvement in ten minutes, and next morning he was quite well.

Treatment of Poisoning.—The treatment of hyoscine poisoning consists in the administration of pilocarpine 0·015 gramme (one-quarter of a grain), strychnine 2·2 milligrammes (one-thirtieth of a grain), caffeine sodium benzoate 0·3 gramme (five grains). When delirium replaces unconsciousness or coma, give sedatives, chloral hydrate 0·6 gramme (ten grains) or morphine 0·01 gramme (one-sixth of a grain).

History of Narcosis.

In 1900 Schneiderlin first found that a combination of morphine and hyoscine induced a surgical anæsthesia in demented patients. This procedure is based chiefly on the synergistic action of the two drugs as narcotics. Although the antagonism between them in certain of their other effects might be looked on as advantageous, permitting the use of large doses with the exclusive view of causing narcosis and eliminating apprehension of the unpleasant side effects, this is true only to a slight degree, the opposite effects of the drugs on the pupil and heart having but little value. In 1903 Steinbuchel first employed the combination in obstetrics, but merely to reduce the pain of labour without inducing narcosis. It was not until 1907 that Gauss reported on 1,000 cases in which the method was used not only to reduce suffering, but also to banish the memory of pain after the completion of the labour. In the following year Kronig reported on 1,500 cases in which one child had died during delivery and three others in the first three days after delivery. Thereafter it was not until a more recent favourable report on 5,000 cases had been made by Gauss that general interest was revived. Since then there have been many variations of the original methods used, and even now there appears to be no single universal rule to follow.

Method of Using the Combination of Morphine and Hyoscine.

Gauss's original plan was very complex. In order to obtain a simple state of amnesia with insensibility to pain, the so-called "twilight sleep", he carefully adjusted the dosage to the individual case by means of a "memory test" carried out at intervals during the course of labour. In *primiparæ* the first injection, consisting of morphine hydrochloride 0·01 gramme (one-sixth of a grain) and hyoscine hydrobromide 0·4 milligramme (one one-hundred-and-fortieth of a grain) (injected separately into each thigh), was given when uterine contractions occurred every four to five minutes and lasting at least half a minute. Three-quarters of an hour later the same dose of hyoscine was repeated. Half an hour later a memory test was used, the patient being asked how many injections she had had and if she remembered some strange object shown to her at the time of the first injection. The memory test was repeated thereafter every half hour, new objects being used each time, and if memory was still present one and a half hours after the second injection, a third injection of hyoscine 0·3 milligramme (one two-hundredth of a grain) was given. Subsequent memory tests may indicate additional injections of hyoscine, but these should be small and given only at long intervals. No additional morphine was given after the first dose. Also the patient had her ears plugged and her eyes

shaded to exclude as many sensory impressions as possible.

This method, needless to say, was very tedious and took the full attention of the attendant, so that it was not long before some modification was introduced to do away with memory tests and individual dosage.

Seigel introduced this type of standard routine dosage. His details were: When labour was definitely established give "Narçophine" (morphine and narcotine moconate) 0·03 gramme (half a grain) and hyoscine 0·4 milligramme (one one-hundred-and-fortieth of a grain). In three-quarters of an hour give hyoscine 0·3 milligramme (one two-hundredth of a grain), and in three-quarters of an hour more, "Narcophine" 0·03 gramme and hyoscine 0·4 milligramme, then repeat the hyoscine 0·4 milligramme every two hours. This type of routine dosage has been generally followed, the variations being in the amount of the drugs given and the intervals.

There appears to be general agreement on the first injection, that is, morphine 0·01 gramme (one-sixth of a grain), hyoscine 0·6 milligramme (one one-hundredth of a grain), atropine 0·36 milligramme (one one-hundred-and-eightieth of a grain) in *multiparæ*, and morphine 0·015 gramme (one-quarter of a grain), hyoscine 0·6 milligramme (one one-hundredth of a grain) atropine 0·4 milligramme (one one-hundred-and-fiftieth of a grain) in *primiparæ*. To *multiparæ* the injection is given when labour is definitely established and to *primiparæ* either when dilatation of the cervix is "one shilling" or when pains occur at regular five-minute intervals.

There is also general acquiescence that the morphine is never repeated and that when it is considered that delivery will occur within four hours the morphine is not given at all.

The subsequent giving of hyoscine appears to vary in marked degree. The earlier exponents gave hyoscine 0·15 milligramme (one four-hundred-and-fiftieth of a grain) every one to two hours, as required to keep the patient narcotized; later workers used 0·32 milligramme (one two-hundredth of a grain) every two hours as long as required; later again the directions indicate hyoscine 0·6 milligramme (one one-hundredth of a grain) in an hour and then 0·32 milligramme (one two-hundredth of a grain).

It is rather interesting to note the gradual increase in the amount of hyoscine given indicating that any ill effects anticipated earlier have not occurred.

Having thus reviewed the morphine-hyoscine technique, it is interesting to observe the different opinions expressed in regard to the disadvantages and advantages of the method.

B. C. Hirst summarizes the disadvantages as "prolongation of labour, tendency to atony of the uterus with hæmorrhage and an increased proportion of apnœic babies that could not be revived". But he found it of advantage in neurotic *primiparæ* when a long labour was expected.

Eden states that prolongation of labour is most marked in the second stage owing to suppression of voluntary muscular contractions, and in consequence forceps are used more frequently, with the added risks of puerperal morbidity and damage to the child. In the few cases I have seen I have never noticed this suppression of voluntary muscles in the second stage; rather the reverse, as the patient usually seems receptive enough to do what she is told and uses her pains as directed. The recent publication by the Alfred Hospital anæsthetic staff suggests that the prolonged second stage is due to the reduction of uterine contractions.

Eden then goes on to note the fœtal apnœa due directly to the maternal narcosis, more particularly if a general anæsthetic has been given.

Whitridge Williams's objections are the fact that one cannot promise a satisfactory subjective result to more than three patients out of four (one finds it hard to agree with him in this contention); that the second stage is definitely prolonged; and that there is a definite, although small, increase in fœtal mortality, apparently due to direct poisoning of the fœtus. He also emphasizes the difficulties associated with its use in private homes. He can find no increase of maternal mortality or increased incidence of *post partum* hæmorrhage.

On the other hand, we have the enthusiasm of Polak, who asserts that narcotization of the child (apart from oligopnœa for a few minutes), if encountered, is not the fault of the method, but of the dosage and manner of applying it, and that the actual fœtal mortality is lessened rather than increased by the procedure.

Carlton Oldfield states:

> The means of dulling pain are simple and safe, so that there is no reason why every patient should not be reassured beforehand and relieved at the time of labour.

He always gives pituitrin as soon as the second stage is reached. This is also advocated in the recent publication of the anæsthetic staff of the Alfred Hospital.

In respect to the child, Oldfield considers that the possible ill effects have been exaggerated by most writers. The oligopnœa occurs about once in eight cases and more frequently if morphine has been given within four hours of the birth. Asphyxia he has not seen occur unless some other obvious cause for it was present apart from the drugs, for example, difficult forceps delivery.

These extracts give some idea of the diversity of opinion on the subject, but I think all agree on the special indications well summarized by Bourne:

1. Principally for *primiparæ* or those in whom labour threatens to last more than eight hours.

2. In all cases in which a long and tiring labour is anticipated, such as in early rupture of membranes in *primiparæ*; in elderly *primiparæ* (although Professor Marshall Allan's work indicates that these patients are not necessarily in this group); flat pelves, in which time is required for moulding of the head.

The actual effect of the method on the patient is usually very interesting to watch, as in the following case.

A patient, aged twenty-five years, was tall, thin, of the nervous type, and tended always to have some complaint. Her first confinement was a very distressing one, very slow dilatation of the cervix occurring with forceps delivery. The patient was exhausted and had a dread of any similar occasion. She was pregnant again within seven months. She came into labour and within a couple of hours was in a panicky, nervous state. She was put to bed and was given 0·01 gramme (one-sixth of a grain) of morphine and 0·6 milligramme (one one-hundredth of a grain) of hyoscine. The sedative effect was quickly produced and she quietened down, sleeping quietly between pains and rousing when they came on. Two hours later hyoscine 0·3 milligramme (one two-hundredth of a grain) was given. Within an hour she delivered herself after an episiotomy and without any general anæsthesia. Within about one hour later she woke up and had no memory of events from about fifteen minutes after the first injection. The puerperium was excellent. The baby was lusty in voice and limb, even though it was born three and a half hours after the morphine had been given.

A *primipara*, aged twenty-three years, was also a little nervous. After being in labour for seven hours she was becoming difficult to manage and pitiful to listen to. She was given the same initial dose as the previous patient. She responded quickly and, although restless with pains, was very quiet between them. Two hours later hyoscine 0·3 milligramme (one two-hundredth of a grain) was given. Delivery occurred six and a half hours after the first injection, and the patient had only a vague memory of the second injection. The child was very fit and the puerperium was normal. She left hospital firmly convinced that "having a baby" is not so bad, and she would not mind going through it again.

The following is a case to illustrate the effect on the child when morphine is given too soon before delivery.

The patient had a second pregnancy. The history given of the first confinement was that a contracted pelvis necessitated a long, tedious application of forceps. When the patient was admitted to hospital pains were severe and dilatation was just commencing. She was given the same initial doses as the previous two patients and then progressed very rapidly, the child being delivered within one and a half hours. The child was cyanosed and took some time to resuscitate and then had to be watched very closely for some hours.

So that in summarizing the morphine-hyoscine technique, one is forced to the conclusion that there is some risk, but that the risk is mainly due to the morphine. It is this drug that contraindicates the method in cardiac and renal conditions. One feels that if this element could be eliminated, many of the objections would be overcome and practitioners would feel safe in applying amnesia in all cases except precipitate labour, and would not reserve it for frightened *primiparæ*.

Van Hoosar's Technique.

To my mind the solution appears to be in the use of Van Hoosar's technique, in which no morphine but much larger doses of hyoscine are given. I pointed out previously the tendency to use larger doses of hyoscine, and in this method almost a frightening quantity is used. However, when we remember that fatalities from this drug are extremely rare, and the rapid recovery of even small children, surely we may have confidence in its safety.

The Technique.—Most *primiparæ* are moderately distressed after a few hours, that is, when the dilatation of the os is about "one shilling", and *multiparæ* as soon as pains are established. This point appears to coincide with the time suggested for the use of this method. At this stage hyoscine 0·6 milligramme (one one-hundredth of a grain) is given. This is followed by intermittent administration of chloroform to quieten the patient during pains for half an hour when the hyoscine 0·6 milligramme is repeated. In a further half hour the same dose is given again. Thereafter 0·6 milligramme is given every two hours until delivery.

An important variation is that if, during the first hour, the head should be on the perineum or coming over it at one of the half-hour intervals, 0·3 milligramme (one two-hundredth of a grain) must be given, and if within fifteen minutes the delivery is not complete, this dose is repeated. If this is not done, much of the good effect of the drug is lost. This variation is not necessary after the patient has been under the influence of the drug for some hours.

As would be expected, with the use of such large doses as 3·2 milligrammes (one-twentieth of a grain) in five hours, the patient presents a different picture from the morphine-hyoscine subject. The acute restlessness is not so apparent; there is rather a stuporose state, with low muttering delirium and fully dilated, fixed pupils. But even in this state the patient is roused with each pain and she pushes when the head comes well down. As a rule, if the patient is self-delivered, general anæsthesia is not needed, although the patient may require some controlling.

After the delivery is complete the patient quietens down and sleeps on for from three to six hours, according to the number of injections given; after five, usually for six to seven hours. As a rule, restlessness occurs during this interval and the patient has to be watched. But I have this week received a communication from D. McG. Steele, of Pyramid, stating that this phase is completely abolished and the patient wakes up in half the time if she is given morphine 0·01 gramme (one-sixth of a grain) immediately the third stage is completed. The babies never seem to show any ill effects, and the mothers remember very little after the first injection.

Application of the routine is seen in the following cases.

A *primipara*, aged twenty-four years, came into labour at 4.30 a.m., but the pains were not very severe. By 2.30 p.m., that is, in ten hours, she was tiring and the pains were severe. At 2.35 p.m. hyoscine 0·6 milligramme (one one-hundredth of a grain) was followed by chloroform. At 3.5 p.m. the dose of hyoscine was repeated; it was given again at 3.35 p.m. and at 5.35 p.m., and delivery occurred at 6.30 p.m. The mother slept on till 10.30 p.m. The child was very well.

A *multipara* had her third pregnancy. Her previous confinement was very rapid and presented no difficulty. On this occasion she had been in labour for fourteen hours with very little progress, owing to a posterior fœtal position. On the patient being brought into hospital, the position was corrected abdominally, but the patient was very exhausted. Hyoscine 0·6 milligramme (one one-hundredth of a grain) was given every half hour for

three doses, and one and a half hours after the last injection forceps were applied, as an extended arm was holding up the descent. Although she was very sthenic and atonic, she woke up three hours later, showing no evidence of shock and gave no further anxiety. The child was very vigorous.

A *primipara*, aged twenty-five years, of the large flabby type, had the fœtal head engaged well down in the pelvis; labour was eleven days overdue. Labour was induced by Watson's technique. After the fourth injection of pituitrin at 11.30 p.m. pains came on very rapidly and extremely severely. Hyoscine 0·6 milligramme (one one-hundredth of a grain) was given at midnight, at 12.30 a.m. and at 1 a.m. Delivery occurred at 1.45 a.m. The puerperium was normal and the child exceedingly lively.

A *primipara*, aged twenty-five years, was in labour eight and a half hours. Dilatation of the os was about "two shillings", and the patient then "lay down to it". Hyoscine 0·6 milligramme (one one-hundredth of a grain) was given at 2 a.m., at 2.30 a.m., at 3 a.m., at 5 a.m. and at 7 a.m. She delivered herself at 7.15 a.m. In this case, probably at 7 a.m., 0·3 milligramme (one two-hundredth of a grain) should have been given, but I did not think at the time she would be delivered so quickly. However, the child was absolutely unaffected and cried vigorously. The mother was not rational for six hours.

In these cases amnesia was practically complete before the second injection and there was no need at any time to restrain the patients.

I can find no references to this technique of Van Hoosar and would be pleased to know of anybody's experience with it. It seems to me to be the best method of inducing a good, safe amnesia.

Glancing back over the whole subject, one really has to agree with Whitridge Williams in his objection to using any of these procedures in a private house without a trained nurse in attendance, and this perhaps is the great drawback to their general use by practitioners. But there seems to be a definite tendency, at least in the country, for all obstetric patients to come into hospital. There are probably two reasons for this: first, it is the only holiday that most of the women get, and, secondly, since the rapid spread of the bush nursing system mothers are appreciating the knowledge that the sisters-in-charge can teach them something about infant welfare.

Under these circumstances I feel that we should persist in our efforts to improve our efficiency in giving relief to all women in labour.

SOME RECENT ADVANCES IN THE PHYSIOLOGY OF HEARING AND IN THE STUDY OF DEAFNESS: THEIR PRACTICAL APPLICATION.

By DOUGLAS G. CARRUTHERS, M.B., Ch.M. (Sydney), F.R.A.C.S.,

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IN choosing a subject for this address I have been influenced by what, at this time, amounts almost to despair in our present ability to give relief to the deaf. In my words to follow I trust there is some fresh evidence of advancement in the subject. It is my regret that I have as yet nothing of my own to offer you, but instead a brief statement of the work of others, which in a summary form may provide food for thought and a basis upon which to build future conclusions.

It seems to me that a true understanding of the problem of deafness will come only through workers who are able to combine with clinical experience a thorough knowledge of the physics of sound in all its qualities of production, conduction, resonance, and electro-physical propagation, and also a profound understanding of voice production and articulation. Before the clinician can hope to give accurate interpretation to the disorders of the hearing function or to devise scientific methods for the relief of deafness, he must try to understand what these workers have done.

The physiologist and physicist of sound, and now the clinician, are convinced now more than ever before that sound and hearing are not just simple events, but comprise an analysable process of greatest complexity; likewise the disorders of hearing are not simple, but complex and variable. Treatment awaits adaptation to these complexities and variations.

There have been many theories of sound perception, principally divided upon the location of sound analysis in the cochlea or in the brain. It is now more or less accepted that the cochlea does perform a function of analysis, but for reasons based upon the physiologist's observation of the maximum frequency response of nerve fibres in comparison with the very much greater frequency of many sound vibrations, it is concluded that the impulse passed on to the brain is in the nature of a sound pattern of impulses, which, reaching the perceptive centres, are brought to recognition as a result of the impressions left in memory from past similar experiences. In the cochlea, the organ of Corti is, by reason of its obvious connexion with the arborizations of the auditory nerve, accepted as the ultimate end organ of sound reception. Helmholtz's theory may be said to remain only in so far as the cochlea and not the cerebrum is regarded as the region responsible for analysis of the sound stimulus. There is still considerable controversy as to the ability of the minute fibres of the basilar membrane to take up selected vibrations and thereby transmit them to their appropriate receptors. Some authorities dispute this as a mechanical possibility. The only possible alternative would appear to be the operation of a focusing mechanism dependent upon the localization of maximum stimulus at the correct site by reason of phase differences of pressure, with or without some voluntary or reflex action by the intratympanic muscles. This possibility will be referred to further in describing the theory of Professor Max Meyer, of Missouri, United States of America.

Human hearing is divisible into two essential elements: the perception of pitch or tone, and the perception of articulation. The problem of deafness requires consideration of these two components in each case. It is widely recognized that every instance of deafness is analysable and that the loss

is not as a rule uniform for the whole hearing tone range, but occurs in greater and less degree for different pitches of the scale. The common clinical regard for this fact reaches to the minor distinction of high note loss in perception deafness and low note loss in disorder of the conduction apparatus. The coming into vogue of some methods of surgical attack, and of artificial aids which one will soon endeavour to adapt to each individual patient, must soon demand that the otologist will test his patient accurately for tone loss throughout the whole hearing range. For this purpose accurately calibrated tuning forks, employed under a standard plan of testing, or electric audiometers are now developed and in process of improvement. The forks are more accurate in experienced hands, while the audiometer is easier to use and tests can be made more quickly with it. The Western Electric Company of the United States of America has done an enormous amount of work in the study of sound and hearing essential to their activity in the turning out

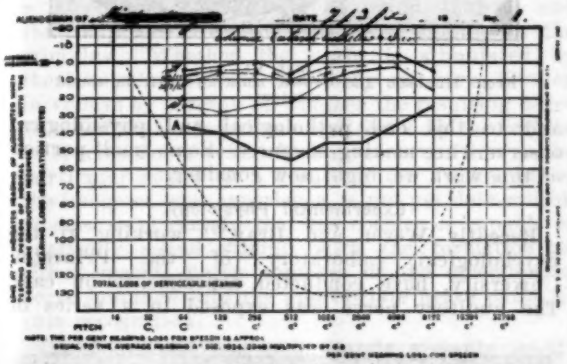


FIGURE I.

Audiogram of a typical case of subacute catarrhal otitis exhibiting low tone loss and showing progress under routine treatment.

of telephones, wireless apparatus, talking theatre equipment and hearing aids. As a result they have been able to produce two audiometers, one passing to an ear-piece pure notes of constant frequency, and the other which reproduces through a loud speaker vowel and other vocal sounds from a specially prepared gramophone record. The intensity of reproduction can be varied by an attenuator from the dial of which the intensity perception of the patient is read and in turn recorded on a graph. It has been found that for some reason, probably protective, the intensity of perception by the normal ear does not vary in the same proportion as the intensity at the source, but as the square root of the distance of the source of sound and as the logarithm of the source intensity. Based upon the latter observation, a sensation unit called a decibel has been devised and is used in recording audiometric observations.

Articulatory perception also may be measured, and forms a basis of estimation of the patient's compensation for the degree of tone loss, and is thus of value in the location of the lesion, in decision as to the method of treatment and in prognosis. The vowel-sounding audiometer or a trained voice may be employed for this estimation. It appears that there is a power of compensation for ear lesions, greater in some individuals than in others. Thus we may see a similar lesion in two cases, but with totally different degrees of loss of speech perception; or we may see a quite minor

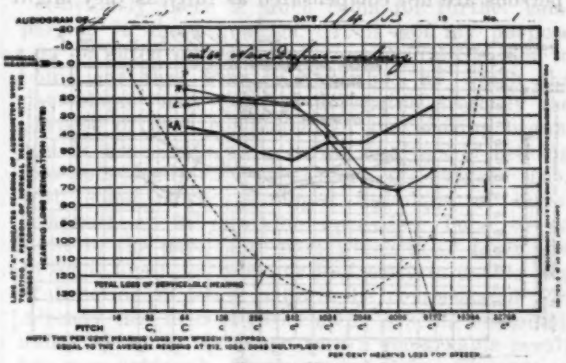


FIGURE II.

Audiogram of a typical case of nerve deafness showing high tone loss.

lesion with great loss of perception, or a severe lesion with little or no apparent loss of ability to hear usefully. It is now suggested that these apparent anomalies are explained in part at least on a basis of a variable power of compensation in different individuals. The vowel sounds are the essential producers of wave patterns; each pattern is preceded by an interval of time before perception

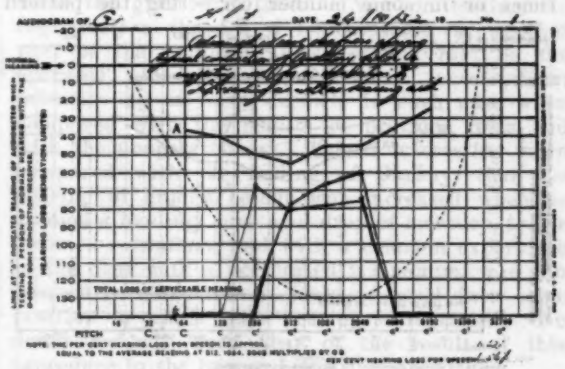


FIGURE III.

Audiogram of a typical example of advanced deafness exhibiting contraction of remaining auditory field to middle of tonal range.

commences and followed by a period of silence; thus is confusion from pattern overlapping avoided. Fatigue, delayed stimulation, and distortion in the deaf appear to be responsible for shortening and irregularity of these intervals, so that pattern overlapping results. Compensation for these effects, which is apparently a cerebral function, would appear to be dependent upon the ability to overcome this interval irregularity and to substitute in the cerebral centres, new memory patterns taking the

place of old ones, now distorted in relation to the preexisting cerebral image as a result of deficiency of tone perception and of this pattern overlapping. Ability to compensate in this manner is a variable quality in different individuals, apparently as a result of a variable tendency to fatigue and as a result of a variable degree of sharpness of the cerebral centres. The point to be considered is that some persons are not compensated as fully as they might

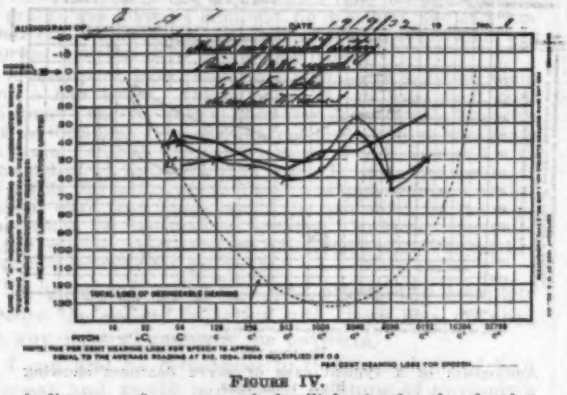


FIGURE IV.
Audiogram of a case of familial otosclerosis showing remarkable similarity of graph for both ears.

be, and there is evidence that this latent ability to be compensated can be further developed by a process of reeducation and training after causes and advancing factors have been overcome. It is possible, too, that some of our subsequent surgical and artificial aids may be directed to assist in giving relief by shortening or lengthening the conduction times or in some manner correcting the pattern

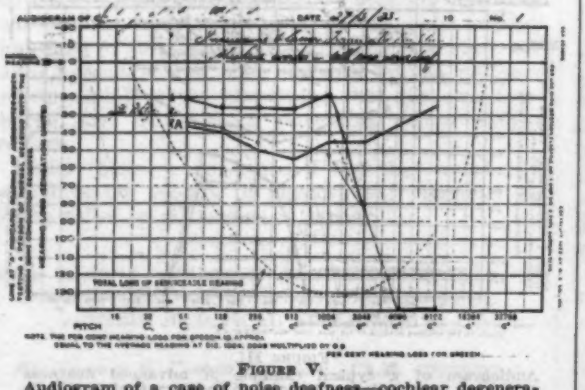


FIGURE V.
Audiogram of a case of noise deafness—cochlear degeneration and high tone loss, with a superadded catarrhal *otitis media* in both ears, and in addition traumatic rupture of tympanum on the right side, which so lowered hearing ability that reserve of useful function was overcome and speech perception was lost.

intervals. A method of reeducation suggested by Lowndes-Yates[1] comprises fifteen-minute lessons daily, employing the male and female voice, and followed by repetition of all misinterpreted words until the distorted pattern is understood. At the next lesson the deficiencies of the last are again gone over and then further dictation is proceeded with.

We see, then, that two elements of auditory perception, tone and articulation are to be considered in each case of deafness. With a knowledge of the deficiencies of each of these qualities sufficient headway has been made for us to draw some conclusions as to diagnosis, prognosis, and treatment. However, there is as yet considerable ground to be covered,

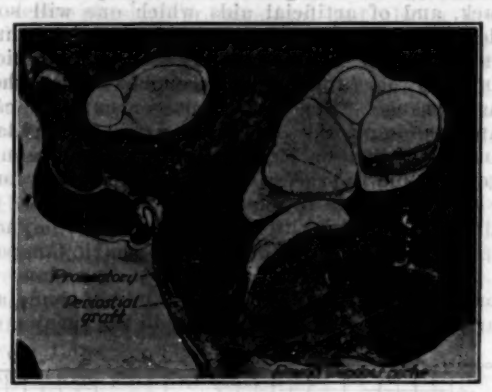


FIGURE VI.
From Hughson and Crowe, showing graft in sound window.

and to this end pathological and physiological observers are making advances. Some small portion of this work we might now consider.

Experimental Physiology.

Recently Wever and Bray,[2] working at the Psychological Laboratory of the Princeton University, have conducted experiments on cats. The auditory nerve was exposed in a series of

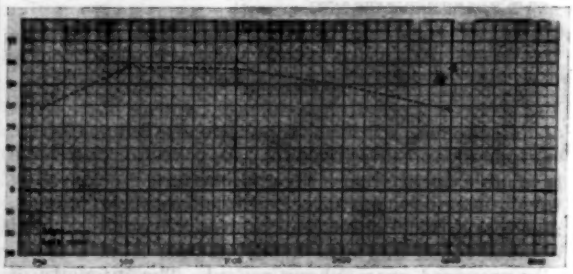


FIGURE VII.
Graph showing increased Wever and Bray response in cat's ear after round window grafting. The straight line, "0", indicates ungrafted response.

animals, an electrode was placed upon the nerve, and another on the body of the animal, the two in turn being connected with an amplifying system and telephones, when it was found that sounds falling on the cat's ear were reproduced in the telephones; high notes were reproduced (up to 5,000 cycles at least) as well as low, and speech could be understood and the speaker identified by his voice. Evidently in some part of the circuit between the two electrodes changes of potential are produced which are an accurate copy of the sound waves falling on the ear. Wever and Bray consider that these potential changes are due to the impulses

travelling in the fibres of the auditory nerve, and they have in turn reached various conclusions as to the nerve mechanism of the cochlea. E. D. Adrian,[3] of the Physiological Laboratory at the Cambridge University, has confirmed the experiments, but in the light of known facts of the conduction of nerve impulses he has questioned the nature of the actual impulses which would in the process of hearing be conveyed along the auditory nerve, it being considered on experimental grounds that the maximum frequency of nerve-conducted impulses is 1,000 per second; yet some of the sounds transmitted in the Wever and Bray tests were up to 5,000 cycles per second. It was further shown that the effects could be observed with the electrodes placed otherwise than on the nerve, in adjacent parts, such as at the *foramen rotundum*. However, there was no reproduction once the nerve was divided. Other tests established that this is a phenomenon definitely produced by the living cochlea. The conclusions from these experiments are that the cochlea acts as a microphone capable of fine sound analysis and that impulses are produced corresponding to the stimulus. Whether the brain is stimulated by these impulses carried *in toto* by one nerve fibre or in volleys by several, or whether the resulting nerve (not electrical) impulses are directed by the cochlea to specific nerve cells which give recognition to the particular sound as a result of the awakening of the image of past experience, is not yet determined. It does seem certain that the cochlea is capable of analysing sound stimuli with the formation of either specific nerve impulses or the direction of nerve impulses into the appropriate nerve paths to gain recognition.

An additional fact immediately presents itself: that herein we have a most useful basis of further physiological investigation. Recently, Crowe and Hughson,[4] of the Johns Hopkins Hospital, have applied this method in attempting to determine the part played in hearing by the component parts of the middle ear. They found in respect of the Wever and Bray response that:

1. Removal of the external meatus or auricle caused considerable loss of the hearing range, while clean incision of the membrane was without effect.

2. Damage to the malleo-incudal or incudo-stapedial joints prevented the conduction of all tones except those of 4,096 cycles and over.

3. Adequate tightening of the *tensor tympani* interfered with conduction of spoken words and pure tones up to 2,048 cycles; relaxation of the tensor brought the conduction back to normal at once.

4. Division of the tensor tendon close to the malleus brought about after ten days a lowering of the range of all notes above 1,024, whilst tones within the ordinary range of pitch of the voice were unaffected (showing a hitherto unrecognized cause for the loss of hearing for high tones).

5. Pressure on the round window increased the clearness and audibility of the conversational voice and of practically all tones between 512 and 4,096 cycles. The round window therefore seems to act as a safety valve for the protection of the inner ear. This was the only experiment which increased the effect.

7. Filling the round window with wax or plaster had no appreciable effect on the transmission of sound.

Obviously there is much room for further comparison in these findings. It is not my purpose now to enter into detailed comment, but rather to point out that here is a method by which the physiologist may hope to determine precisely the purpose of each component of the hearing organ, and in time, with an accurate analysis of hearing loss and of clinical appearances, the surgeon may, with some newly developed technique of intratympanic or labyrinthine operation, hope to go right to the particular part which is at fault and to set it again in order, or indirectly to enable loss of function of some part to be compensated for. Already this field of experiment is being exploited, and at least in the laboratory a remarkable result has been achieved. Hughson and Crowe,[5] continuing their work, have further investigated the finding that pressure on the round window always increased the Wever and Bray response. A series of cats were first tested, a stethoscope being used to lead the sound into both ears at the one time; the animals were shown to give an equal response from both ears. An operation was then performed, a piece of periosteum or fascia being grafted over the round window of one side. Many animals died owing to sepsis, but six survived, and in each of these the graft had taken. Now on testing the reproduction through a loud speaker in another part of the building, it was found that on the operated side the response was increased in intensity up to forty decibels in each case when compared with the results of previous tests and with the unoperated ear. This is interesting when compared with the finding of Bárány, that the hearing of human beings was increased when he applied a loading, such as a drop of mercury, to the *foramen rotundum*, and with a common experience in the deaf with a perforated tympanum, who can frequently manœuvre a piece of wool into some position in which their hearing is increased. No doubt we will soon hear of the result of this procedure in the human being.

Perusing the findings of Hughson and Crowe in respect of interference with the various structures of the middle ear, it is obvious that there is likely to be a stage when one will have to correlate the findings from audiometric analysis and of clinical inspection with physical findings of interference with particular sections of the ear, whence it may become possible, with the development of aseptic technique, to reintroduce to our practice many of the tympanic operations described by Politzer[6] as giving definite benefit to his patients, unfortunately, however, at that time only of temporary duration. Similarly, consideration needs to be

given to the *modus operandi* of the cochlea in an effort to place on a scientific basis existing operations, such as that of Sourdille,[7] and others of the future. There appears to be a common misconception of sound as a sort of wavy line seeking to find a hole in the tympanic bone to enter. One author has even described models and given a physical description of the middle ear to demonstrate how the waves, obviously described with a linear conception, must enter by the round window.

Controversy has raged as to whether some notes enter by the round window and others by the oval. Alexander,[8] of Vienna, has advanced support on physical, comparative and human anatomical grounds for round window reception, while Pohlman,[9] step by step, takes his arguments and brings evidence for the opposite conclusion. F. Leire[10] has also brought forward arguments supporting round window conduction of the higher tones, but with the qualification that it is thought by some that these notes may activate the cochlea through bone. The finding of Hughson and Crowe, that interference with the ossicles prevented conduction of all tones except those over 4,096 cycles, would seem to support the round window or bone conduction of such tones. The obvious fact is this: we all know that all tones can reach the cochlea independently of the foramina by bone conduction; and it is apparent that every pressure and rarefaction falling upon the tympanum must exert some corresponding effect upon both membranes and upon the body structures as well. Need we then give such weight to the precise portal of entry most likely for individual tones? The primitive otocyst and the semi-circular canals are each acted upon by changes in the position of the head; in the former instance minute changes in the nature of a shake due to sound vibrations, in the latter, of course, relatively greater changes of position occurring. But in each the stimulus may be regarded as a flow of the contained fluid causing stimulation of the hair cells of the maculæ.

Meyer,[11] in a recent paper, compares the cochlea to a water-filled tube with the ends lightly corked. Suddenly move the tube in its long axis and the cork at one end will be caused to fly out as a result of the pressure of inertia of the contained fluid. A second comparison is made with a set of fine scales: add a gramme weight to one pan and the indicator rapidly moves over; now load each pan with 100 grammes and add one gramme to one pan, and the indicator passes over quite slowly. The movement of the indicator may be described as varying in phase as a result of loading. Meyer regards the cochlea fluid as moving within the scale in the same manner as the water in the tube, but in varying phases, due to the nature of the impulse applied to the tympanic structure as a whole, somewhat as a shake of the head. The two fenestræ, with their membranes, are compared to the corks, and the ossicles fixed to one as an unequally applied loading. Variations of stimulus are then regarded as due to phase difference in the movement of the cochlear fluids. This is only a theory, but while it does allow for stimulus through the foramina, it would tend to rule out entry of particular sounds by one or the other of the bony openings. This contention also is supported by the existence of the phenomenon known as bone conduction, in which it is seen that all tones throughout the hearing range may reach the inner ear by bone. Acceptance of such a theory would, with the exception of true perception deafness, explain hearing disorder as due to interference with loading factors in the middle ear or due to variations of the cochlear fluid pressures. If we are to explain the results of such operations as that of Sourdille or of Hughson and Crowe, in order perhaps to modify or perfect their technique, we must give due consideration to a theory such as this in order to determine whether the effects produced are a result of making a new hole for sound entry or due to decompression of the perilymph. Sourdille regards both as playing a part.

Pathological Observations.

Stacy R. Guild,[12] again of the Johns Hopkins Hospital, has reported upon the microscopic data of fifty ears in which *ante mortem* clinical observations and audiometric recording of the hearing were available. Herein may be said to be the most difficult task in otologic research, for comparison of the living observations and *post mortem* findings are most confusing. In the middle ear great variety and degrees of thickening, distortion and destruction were found; yet in one case the hearing had been normal for all tones; in another with advanced middle ear changes there was a normal cochlea and only loss of some degree of higher tone perception. Hope is expressed that the Wever and Bray testing system will soon throw light upon this aspect of the problem. On investigation of the density of innervation in relation to hearing acuity in young adults there was found a wide range of variation in the ganglion cell count in a series of patients who had had normal hearing, the margin of difference being up to 40%. On the other hand, this observer did find degeneration of large areas of the cochlea corresponding to regions previously indicated by several observers as being responsible for perception of those tones which were largely lost. In this matter of localization of sound reception in the cochlea, while there is not exact agreement, the work of Yoshii, Wittmaack, Held and Pavlov provides evidence for the localization of high tones at the base of the cochlea and lower notes towards the apex.

The brain centres of the deaf as yet remain for investigation of changes which may occur there in explanation of hearing loss, so that we may be able to complete the estimation of possible restoration of function by operation and various artificial measures.

Demonstrating the complicated nature of the processes to be considered in deciding the prognosis in all cases, especially of otosclerosis, is a recent

communication by that accepted authority, Albert A. Gray.[13] He reports that an early change in otosclerosis, probably preceding any fixation of the stapes or bony changes in the labyrinth, is a degeneration of the fibres of the eighth nerve, the changes appearing first in the medullary sheath and neurilemma, and later in the axis cylinders. As a result of this finding Gray proffers an

FIGURE VIII.
Organ of Corti present at six levels in mid-modiolar section (Stacy R. Guild).

interesting explanation for *paracusis willisii*. Overflow of impulse energy from nerve fibres now non-insulated, such energy being the result of surrounding noise, is regarded as adding to the intensity of the impulse in the fibres conveying the sound being concentrated upon, with the result that a greater degree of stimulus is given to the brain centres. The latter is pure hypothesis and as such could be debated with many other theoretical explanations of this phenomenon. The important feature is that cochlear changes are known to occur in almost all forms of deafness, especially when advanced. Now is added this evidence of nerve degeneration in otosclerosis. Here are elements which we cannot hope to replace, and thus a factor which one must hope to be able to estimate before arriving at any conclusions as to the value of any method of treatment in any individual case.

Perhaps more immediately of practical application are the findings of investigation of epithelial reaction, of mucous secretions and exudates, and of cerumen function in middle ear disease. Evidence is advanced, notably by Lowndes-Yates, of two types of cellular reaction. One shows much epithelial desquamation and little or no leucocyte reaction, and with only slight bacterial ingestion and cytolysis as observed *in vitro*; this type is described as the atrophic form of subacute *otitis media*. It is often found in the absence of any focus in the nose or throat, but with a history of recent influenza, and it is claimed to leave a tendency to periodic deafness, resembling otosclerosis. The other type, designated hypertrophic, shows in aspirated secretions many leucocytes with ingested bacteria, relatively fewer epithelial cells, and marked cytolysis after standing for twenty-four hours. In addition, there is usually a nose or throat focus. In these cases tendency to ultimate deafness is less than in the former type, and a shorter period of after-treatment may suffice. In both types it is stressed that Eustachian drainage by suction should be instituted and continued until nasal infection and Eustachian exudate formation are overcome, while inflation should only follow such effects. Indeed it should not be employed at all in some cases where the malleus is displaced out instead of indrawn. Rather in these instances one should restore the true equilibrium by filling the external meatus with a wax for some weeks to overcome stretching of the *tensor tympani*.

Examination of nasal and Eustachian mucus has exhibited variations in the cytolytic and bacteriolytic powers, the latter appreciably diminishing when the mucus was diluted or allowed to dry rapidly. Indeed, such dried mucus, when redissolved, became an efficient culture medium for the germs contained within it. Such factors must affect our decision as to when syringing of the ear or nose should be permitted.

Finally, it was observed that some exudates were acid and others alkaline. It is thought possible that the reaction is dependent upon the organism responsible, the tissue-digesting enzymes of some acting better in an acid or an alkaline medium, as do the digestive juices of the alimentary tract. Some evidence is advanced of improved response by altering the reaction by appropriate drops.

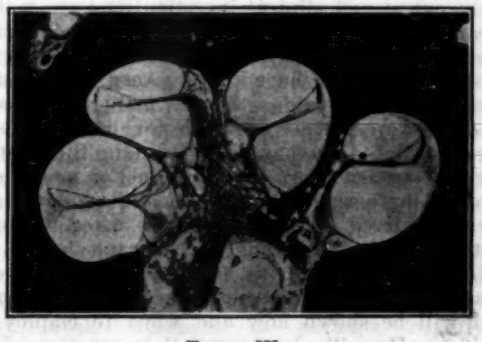


FIGURE IX.
Organ of Corti present at only four levels in mid-modiolar section. Hearing in 1 and 2 had been normal and similar for all tones in both cases (Stacy R. Guild).

The cerumen is now regarded as being necessary to control the evaporation of tympanic mucus. Experiments show that non-wax-protected mucus will dry rapidly, leaving adhesive bands, which either delay the process of healing or form a basis of resultant deafness. When wax is scanty or absent, its function should be reproduced by the employment of oily drops, such as lanoline in liquid paraffin.

Artificial Hearing Aids.

So much, then, for the experimental work. Sound in its analysable qualities is seen to have its counterpart in the disorders of hearing; speech in its components of production is able to be availed of in the reeducation of the deaf; pathological and physiological observations are reaching a stage where we may soon hope to apply the findings to more accurate management of the deaf patient. There yet remains the consideration and modification of artificial hearing aids, such as will always be necessary for those patients to whom neither direct treatment nor reeducation is of avail.

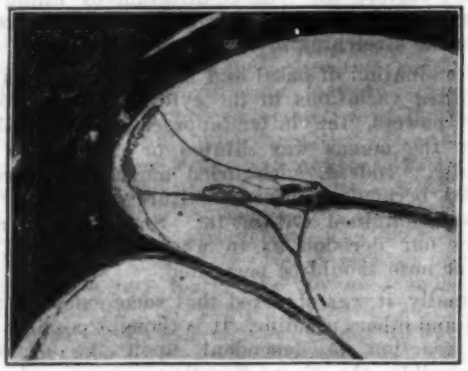


FIGURE X.
A blood vessel attached to the *membrana basilaris* and organ of Corti. No tinnitus and no disturbance of hearing had been detectable in life (Stacy R. Guild).

Experimental work, physical, physiological, pathological and clinical investigations are making great advances in the matter of sound and of hearing; for the present, and probably to a certain extent always, we have to rely very largely upon various artificial aids. In the fitting and use of these, however, there is room for more scientific consideration than has been given in the past, so that the patient may have not just a machine as supplied by a shopkeeper to all and sundry, but a device ordered by the otologist after thorough testing of the full range of hearing loss. The individual will then, as far as possible, be compensated exactly in proportion to his deficiencies and will be shown how and when to employ the artifice. He will also have full instructions as to lip reading and other methods of reeducation essential to be employed along with every form of artificial device.

Investigation of the average normal hearing in a great number of cases has revealed the fact that throughout the hearing range, comprising tones from 20 to 20,000 cycles, there is a threshold of intensity for each tone. This threshold must bear a more or less constant relation to that of other tones in making up the recognizable phenomenon of speech and other complex sounds to which our psychological experience is able to give recognition. Similar investigation applied to the deaf reveals that the loss of power to hear is analysable and that deafness is not merely a loss of power to discern sound as a whole, but a reduction in variable degree of the perceptive power for different tones. The ideal hearing aid must be designed with these facts in mind in an endeavour to bring the resultant intensity of all tones into somewhat the same relation which they occupy in the normal. The brain will then receive the complex sounds of speech in that same tonal make-up which life's experience has previously inscribed upon the mind as a basis of memory, to be called into consciousness by a future stimulus of the same nature, whence recognition is made possible. If sounds such as speech reach the brain with the tonal relationship distorted from the normal, recognition is difficult or impossible. This has been the fault of all electrical hearing aids to date, and it is in the direction of overcoming this deficiency that research is being carried out. Under the auspices of the American Federation of Organizations for the Hard of Hearing,[14] the United States Bureau of Standards conducted a test of some fifty artificial aids, including trumpets, horns and electrical devices; this was in 1927. Unfortunately the ideal was not discovered. Two features desirable in any aid, namely, clarity of articulation and intensity of magnification tended to appear in inverse ratio. Tubes, horns and cups gave practically perfect articulation, but had only such intensity value as enabled the speaker to address the wearer at tube distance instead of right at the deaf one's ear, while electrical devices, enabling perception of the voice at an optimum distance of ten feet, produced

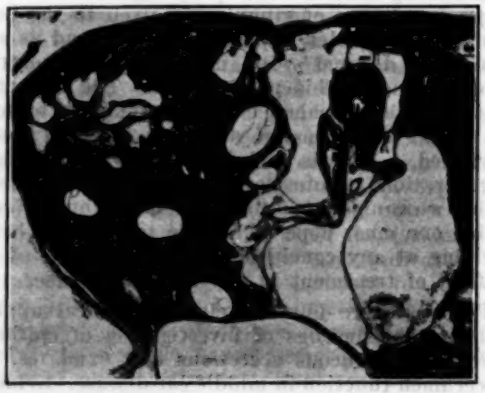


FIGURE XI.
Gross adhesions causing fixation and distortion of middle ear structures, yet hearing had been normal for all tones (Stacy R. Guild).

great distortion. This is of great moment, since it is revealed that the power of accurate articulatory perception is relatively worse in the deaf than the actual percentage loss of sound perception; thus there is very little room for a hearing aid to produce distortion and yet remain useful. In England, under the auspices of the National Institute for the Deaf,[15] research was undertaken in the Depart-

ment of Industrial Physiology of the London School of Hygiene and Tropical Medicine, investigation being turned to the determination of selective qualities for particular tones of the component parts of electrical hearing aids. Briefly it was concluded that hard carbon diaphragms magnify frequencies from 200 to 3,000 cycles, but are not so good as soft carbons between 1,000 and 2,000 cycles. The hard disks fail to reproduce the fundamental vowel sounds well and also those overtones between 1,000 and 2,000 cycles. It appears, then, that in the hard disk we have most useful magnifying effects between 2,000 and 3,000 cycles, while the soft diaphragms magnify well from 100 to 2,000 cycles.

Here is only a rudimentary advance, but nevertheless one which has already made possible some adaptation of a hearing aid to the individual based on the results of audiometry. Built into double or triple microphone instruments, with a relationship of hard and soft disks in proportion to the hearing loss in the upper or lower sections of the tone scale, the investigators were able to report that "the vast majority of all patients can be enabled to hear accurately and well by means of properly prescribed hearing aids". In the direction of further advance in this problem, some attention must be given to the work of investigators in wireless, telephone and talking picture equipment. In these fields, valves and filters have been devised which will bring to the reproduction clarity and controlled intensity, dependent upon correct mixing and reduction or intensification of the tone scale. Such filters and valves can be built into a hearing aid, enabling it to be tuned to the deficiencies of any individual deaf

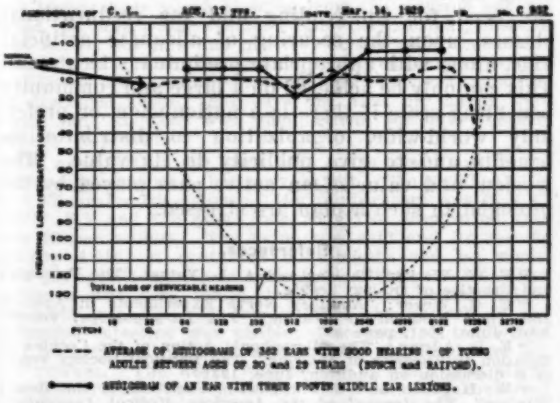
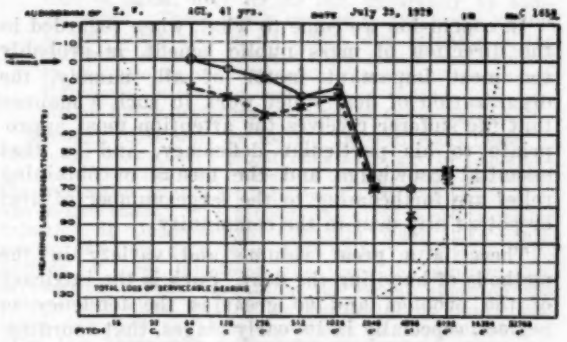


FIGURE XII.
Audiogram of subject of Number 4 in life, showing full tone normal hearing (Stacy R. Guild).

patient. However, complexity, size and price remain to be overcome before such a device becomes marketable for general use. The way, then, is open; only the means require to be modified. Then the time will come when the otologist will test his patient audiometrically and, based upon the resultant graph, will prescribe a hearing aid, as does the optometrist today in the case of defective vision.

The purpose of this description of hearing aids is to impress upon the followers of our specialty that the deaf aid is already a useful device, but that with its design and the knowledge of deafness approaching a scientific basis, the matter of when and what type of device is to be ordered is the province of the otologist rather than of the shopkeeper or optician.



AUDIOGRAMS AND SPIRAL GANGLION CELL DATA OF EAR WITH MARKED LOSS OF ACUITY FOR HIGH TONES, BUT A GREAT MANY GANGLION CELLS.

SIDE	APPROX. TOTAL NO. OF GANGLION CELLS	AVE. NO. GANGLION CELLS PER MM. OF LENGTH OF ORGAN OF CORTI, BY REGIONS: LOWER BASAL	UPPER BASAL	LOWER MIDDLE	UPPER MIDDLE plus APICAL
R	34,080	1025	1500	1234	977
L	31,624	947	1407	1343	736

FIGURE XIII.
Audiogram showing marked loss of higher tones, yet ganglion cell count throughout and in lower basal turn of cochlea were above normal number (Stacy R. Guild).

That the hearing of many deaf sufferers can be improved and that they can be compensated for their loss by a process of reeducation seems to be established by the experience of many. Lowndes-Yates,[14] of London, is emphatic on this point. To supply an artificial aid to a patient not fully compensated within his means to become so is considered likely to induce a laziness of hearing, with a consequent more rapid loss than might otherwise have taken place. That a patient may be attracted by advertisements to purchase and use an artificial aid before the progress of his ailment has been checked is in many cases to give a false sense of security while deafness is perhaps rapidly advancing to an extreme degree. On the other hand, it is a fact that many patients can hear in no other way, and if not able to continue to exercise the faculty, will become mind deaf as well as hard of hearing from their otic lesions. How much better off, however, will such a patient be if the expert otologist plays his part in seeing that the aid is the most appropriate to the particular type of loss, and if the expert at the same time is enabled to give advice as to the value of lip-reading in assisting the following of speech even when the aid is used, and also if he is instrumental in giving instruction, based upon an estimate of its value, in other methods of reeducation based upon a knowledge of

sound and articulatory perception. The rare patient with true paracusis is often decidedly helped by an aid which produces some intrinsic noise. On the other hand, continued subjection to such a noise will produce in time deafness to the corresponding tone. It is the otologist's province to estimate these features in an artificial aid.

Organization for Deaf Aid.

In conclusion we come to what, when regarded in the direction of mass public benefit, is probably the most important factor of all, namely, the organization of deaf relief work in such a manner that the sufferer receives the attention most appropriate to his particular deficiency, and so that essential knowledge and the means of obtaining relief are forthcoming to the large number of deaf or potentially deaf in the community.

There is a great volume and variety in the methods of handling the deaf. Such is the intricacy of the problem and so great is the tendency to neglect, especially in its early stages, that coordination of efforts and dissemination of knowledge are essential. Further research is required and facilities for research must be developed. Classes in lip reading need to be established, especially in outlying centres and for the hospital class, while methods of reeducation and of prevention need to be widely spread. To meet these purposes, organization on a wide and uniform basis is needed throughout the Commonwealth, and affiliated in turn with similar bodies in other parts of the world. In England the deaf aid societies are affiliated in the National Institute for the Deaf, which has in turn been responsible for the establishment of additional leagues throughout the country, until there are few regions unserved with classes of instruction and assistance in receiving appropriate attention. The public have been enlivened into a realization of the need of early attention; health authorities have been stimulated in the matter of school surveys in the prevention and early attention to deafness; information is collected into a useful brochure, and, finally, the wherewithal has been provided for the carrying out of research. In the United States of America similar organization has been carried out, resulting in the American Federation of Organizations for the Hard of Hearing, and similar results have been achieved. In Australia there is no true system such as these, but the need is here and it is not unwise that the members of our specialty should be interested in the building of such an organization, partly for the reason that we are the best able to advise upon the problem. Moreover, by being on the inside, we could prevent our charity from being exploited. We could attend to the development of such organizations on a community basis, in the belief that the benefits from the inception would accrue equally to the paying and non-paying sections of the community.

Summary.

1. Brief reference has been made to the nature of hearing, emphasizing two components, tone and articulation perception, and the separate consideration of each in a case of deafness is stressed.

2. The development of fork calibration and audiometers with a graphic recording of each case of deafness in audiometric fashion is described.

3. Physiological experimentation, revealing a new method of investigation of the function of hearing and of ear lesions has been referred to, with notes of the application of such in a plan of experimental surgery upon laboratory animals.

4. Attention has been directed to controversy as to cochlear mechanism and a theory of the nature of stimulus has been described.

5. Recent attempts to compare degrees and quality of deafness with *post mortem* microscopic findings have been considered, and the difficulty of the correlation is stressed, revealing that we are still a long way from a complete understanding of the problem.

6. The hope is expressed that we may very soon be enabled to consider each case in analytical fashion and devise treatment accordingly.

7. The need of artificial hearing aids, adaptable to the individual after analysis of his deficiency is pointed out, and a summary is given of the progress of work in this direction.

8. In conclusion, the need of organization of deaf relief in the direction of research, of standardization of case investigation, and of uniform application of the best methods of relief is pointed out as being an essential. Special emphasis is laid upon the need for lip reading and for reeducational classes, upon the securing of adequate artificial aids, along with appropriate preliminary treatment. This can only be achieved on a large and community benefiting scale if there is a nation-wide, or preferably world-wide, organization to distribute its benefits and to give publicity to its value. The wisdom and value of an active part played by the otologist in such a plan are stressed.

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Reports of Cases.

GASTRIC ULCER: CHRONIC DYSPEPSIA.[1]

By GUY GRIFFITHS, M.D. (Sydney),
Honorary Physician, Royal North Shore Hospital of Sydney.

MRS. S., a female, aged fifty-five years, was admitted to the Royal North Shore Hospital of Sydney on May 29, 1933, complaining of weakness, wasting, constant hunger and continual return of food, which she described as not actual vomiting, but the food coming back as though she had never completely swallowed it.

Her past history was that in 1890, at the age of twelve years, she had suffered from disease of the spine, which she was told was tuberculous and which on healing left her back very twisted. Despite this, she had married and borne three children. In 1917 she had suffered from severe dyspepsia and was referred to the London Cancer Hospital for investigation, but was assured that the disease was not cancer. In 1927 she had had a hæmorrhage and had been sent to Waterfall Sanatorium, where she stayed for six months and improved in general health. She says that the superintendent considered, however, that the hæmorrhage was a bleeding from the stomach and not from the lung. She was then fairly well, bright, cheerful and active, but thin and not very strong until the middle of April, 1933, when she became very tired and lost weight rapidly as the result of diarrhœa with occasional vomiting as described above. She says also that her hands were weak and "knotted" with rheumatism, but have recently rapidly improved.

On examination she was seen to be small and extraordinarily emaciated, but very bright. She weighed only 31·5 kilograms (five stone). Her temperature was 36·5° C. (97·8° F.) and the pulse rate 96. The respiration rate was 28 per minute. The urine was acid and its specific gravity 1·016; it contained no albumin and no sugar. The patient's tongue was moist and slightly coated. Her abdomen was very tumid, but not at all tense; indeed the skin was lax and dry, so that the pattern of the distended intestine was visible; there was no tenderness and no abnormal dulness, and nothing abnormal was felt *per rectum*. The heart was normal. There was slight arteriosclerosis. The chest was extraordinarily contorted by an extreme scoliosis, convex to the right in the thoracic region and to the left in the lumbar region, with very prominent gibbus. The pupils were equal and active, and the knee jerks present.

The patient took a simple bismuth mixture with some improvement in her condition, but not complete recovery. Blood was drawn for a Wassermann test, but unfortunately the serum was lost by breakage. The fæces were examined for tubercle bacilli, but none was found; they contained minute quantities of blood. An endeavour was made to analyse the gastric juice, but, despite skilful handling, the patient could not swallow the fine Ryle's tube, even after cocainization.

Skiagrams of the chest showed the extreme scoliosis described, but no active osseous lesion and beautifully clear lungs. Skiagrams of the alimentary tract were taken after the patient had been given an opaque meal, and the honorary radiologists, Dr. H. R. Sear, Dr. K. F. Vickery and Dr. Anderson Stuart, kindly reported:

> The stomach is divided into two loculi of a high "cup and spill" or "cascade" form. There is no definite evidence of any organic lesion. The duodenal bulb is pulled over to the left, apparently by some adhesions. There was a residue in the lower loculus of the stomach after six hours, due probably to the "cascade" type of stomach. No lesion was detected in the œsophagus. There are markedly redundant transverse, ascending and sigmoid colons. No persistent filling defect was detected in the skiagrams.

Although there were no morbid physical signs found in the lungs, except such slight ones as might be explained by the deformity, the history of spinal caries suggested the wisdom of testing with tuberculin for the presence of any active lesion. The patient was given a subcutaneous injection of albumose-free tuberculin, 0·001 cubic centimetre, and two days later 0·005 cubic centimetre. To neither of these injections was there the faintest sign of reaction. Four days after the second injection the patient was given 0·012 cubic centimetre (a dose sometimes described as 12 milligrammes of tuberculin) and after this there was a doubtful reaction suggesting an old healed lesion.

The patient was demonstrated at a clinical meeting of the New South Wales Branch of the British Medical Association, held in the Royal North Shore Hospital on June 22, 1933, and suggestions for diagnosis and treatment were invited. Several of the visitors expressed interest in her case, and astonishment at the extraordinary redundance and tortuosity of her colon, but no one offered any suggestion for treatment more valuable than the bismuth she took by mouth and the turpentine enemata, which alone relieved the intestinal flatus. The patient herself enjoyed the meeting and welcomed every visitor in the most bright and alert manner. She described herself as "exhibit number 1, the human gasometer".

Dr. Bligh, an honorary surgeon, kindly saw her and offered the diagnosis of old gastric ulcer with hour-glass stomach and adhesions, but did not recommend surgical intervention.

A second sample of blood was now taken for laboratory investigation and both the Wassermann test and the Kahn's flocculation test succeeded. A mixture of mercury and iodide of potash was prescribed, but the patient found this very disagreeable.

Dr. C. J. Wiley kindly saw her, and though he reserved judgement as to the nature of the lesion, he recommended "Quinby Insoluble", three cubic centimetres twice weekly, given intramuscularly. At the date of this note (August 8) the patient has had six injections of this substance and is progressing very favourably. Her temperature, pulse rate and respiration rate continue to be approximately normal. She swallows readily, vomits but rarely, and is even gayer and more cheerful.

[1] The patient described herein was shown at a meeting of the New South Wales Branch of the British Medical Association on June 22, 1933.

CONGENITAL RENAL APLASIA COMPLICATED BY PYONEPHROSIS OF THE EXISTING KIDNEY.

By KEITH KIRKLAND, F.R.C.S. (Edinburgh), F.R.A.C.S.,
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STATISTICS in the literature about the occurrence of congenital absence of one kidney, although far from being uniform, show at least that the condition occurs frequently enough for the possibility always to be borne in mind by

the urologist. Congenital anomalies of all kinds in the genito-urinary system are so often associated with gross pathology that an accurate estimate of the various units of the system becomes an imperative pre-operative procedure.

I wish to report a case of congenital absence of one suprarenal gland, kidney and ureter. The solitary kidney was pyonephrotic, an aberrant renal vein apparently being the obstructive factor.

Clinical History.

The patient was a married woman of thirty-six years of age. She was admitted to the Royal South Sydney Hospital on July 1, 1933, from the Rachel Forster Hospital, with a history of not having passed any urine for twenty-two hours and complaining of a pain in the left loin.

There had been previous attacks of a similar nature, which had been relieved by passing urine. The first attack was stated to have occurred at the age of three years. The patient was the mother of three children, the confinements being described as normal.

The only abnormality revealed on physical examination was a large tender mass in the left flank, presumed to be a dilated left kidney. Catheterization revealed an empty bladder.

Under urethral anæsthesia I made a cystoscopic examination. The left ureteric orifice appeared normal and was contracting strongly, but with no efflux of urine. No right orifice could be found. The catheter passed freely up the left ureter to about 20 centimetres (eight inches). No urine escaped, nor could a few cubic centimetres of distilled water, which was injected, be recovered.

Operation was performed on July 1, 1933. Under spinal anæsthesia I explored the left kidney by the lumbar approach. It was very congested and the lower third consisted of a tense, thin-walled sac. The pelvis was tensely dilated and the pelvi-ureteral junction was sharply kinked by a posterior renal vein coming from the lower pole. I ligated and divided the vein, drained the pelvis, which contained urine, and punctured the cyst, which was full of thin, foul-smelling pus. No stone could be detected in the kidney or the upper part of the ureter.

The patient bore the operation extremely well and was draining a little blood-stained urine from the pelvic tube before leaving the table. Glucose and saline solution were given intravenously before the patient left the theatre.

Her condition improved a little following the operation, and the tube continued to drain urine. She took fluids well, but the urinary output was never more than about 450 cubic centimetres (fifteen ounces) for twenty-four hours. Uræmic symptoms made their appearance on July 4, 1933, in the form of drowsiness and twitchings, and the patient died about midnight on July 5, 1933.

An X ray examination on July 3, 1933, failed to reveal a stone in the urinary tract, and no shadow of the right kidney could be made out.

Post mortem examination revealed a complete absence of right ureter, kidney and suprarenal gland.

Summary.

The case was of unusual interest from several points of view:

1. The congenital absence of one ureter, kidney and suprarenal gland.

2. The unfortunate presence of an aberrant vessel on the left side, which made efficient emptying of the left kidney a mechanical impossibility.

3. The large isolated pyonephrotic sac which had apparently been present for some years.

4. The successful negotiation of three pregnancies with a renal system that was deficient physiologically and imperfect mechanically.

Acknowledgement.

I am indebted to Dr. S. F. Lynch, who supervised the *post mortem* examination.

Reviews.

EXAMINATION OF THE URINE.

"URINE AND URINALYSIS", by Louis Gershenfeld, is a very up-to-date monograph on this subject.[1] The book is very complete and deals with the physiological, pathological and biochemical aspects of the subject. All the well known tests, with their variants, are given, and the relative value of these tests has been gone into most thoroughly. The chapter on the preservation of urine specimens is very full and gives a long list of preservatives which would be useful when sending specimens a long distance, and shows how each preservative would interfere with the particular test. He stresses the importance of repetition in urine testing, and very few medical men have not at some stage or other been compelled to alter their opinion after repetition tests. In the chapter on glycosuria he states that the presence of a nephritis would tend to lower the renal threshold for sugar; that has not been our experience, and, on the contrary, we have found in nephritis a high blood sugar associated with the absence of sugar in the urine. The author rightly states that the quantitative estimation of acetone bodies in the urine is not of great value, because of the variable loss of these bodies by the lungs. The book deals with the relative importance of the tests for kidney function, and throughout the book an attempt is made to correlate the laboratory findings with the results of clinical examination.

This book is of value not only to the scientific worker, but also to the clinician, as a diagnostician should be familiar with the shortcomings of many of the tests used in examination of the urine, and should be able to evaluate the results that may be obtained from them. The book is very attractively got up and well arranged, and for those who realize the importance of the subject as an aid in the diagnosis and prognosis of disease will be most useful.

ORTHOPÆDICS.

"A SHORTER ORTHOPÆDIC SURGERY", by R. Brooke, is, according to the publishers' note, "intended for the use of house surgeons, masseuses, and others who require a short outline of the methods and treatment usually adopted in orthopædic surgery".[2]

In such a book it is extremely difficult to cover the ground and yet avoid unnecessary detail. The author has succeeded in achieving this object quite well.

The book is well arranged and consists of ten chapters, the first eight of which are anatomically arranged, each chapter dealing with a different region of the body. Each chapter commences with a description of the anatomy and physiology of the region dealt with, and then the commoner deformities and diseases are described, together with a brief outline of their treatment.

One criticism that could be justly levelled at a book intended for beginners, is that some of the methods of operative treatment advised are rather radical, and the advisability of some of them is a matter of contention amongst orthopædic surgeons. For example, in cases of extensive bone destruction resulting from acute suppurative arthritis of the hip joint in infants, the author mentions that "the astragalus may be grafted on to the upper end of the femur". This procedure would not appeal to many experienced surgeons.

The important chapter on the foot and ankle joint is well written and is the best chapter in the book.

The chapter on the spine and pelvis is also a very useful one, and all the common conditions seen in practice are lucidly described.

On the whole the little book serves a useful purpose and has a definite appeal to those for whom it is written.

[1] "Urine and Urinalysis", by L. Gershenfeld, Ph.M., B.Sc., P.D.; 1933. Philadelphia: Lea and Febiger. Crown 8vo., pp. 288, with 36 illustrations.

[2] "A Shorter Orthopædic Surgery", by R. Brooke, M.S., F.R.C.S.; 1932. Bristol: John Wright and Sons, Limited. Royal 8vo., pp. 150, with 126 illustrations. Price: 10s. 6d. net.

The Medical Journal of Australia

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THE DEPRESSION AND THE PUBLIC HEALTH.

WHEN the full weight of the financial depression was felt by the communities of the world, governments, corporate bodies, groups of people and individuals almost without exception looked for means of paying their way. Most people thought that if they spent less money they would achieve their object. Whether this supposition was right or wrong need not be argued. The fact remains that governments the world over cut down their expenditure; the appropriations for various departments were cut down, sometimes in what appeared to be a just proportion, sometimes at the expense of those departments that appeared to give little immediate return. Health has always been the Cinderella of governments; and devotees of preventive medicine viewed with grave concern the possible slackening of effort that was in some places so small as to be almost negligible and in most spheres quite inadequate. In Australia certain departmental activities have been curtailed, sometimes by the failure to make appointments to posts as they have fallen vacant. In these circumstances protest by the head of the department is useless; although the head of a department is best able to show the ministers how proposed changes may react on the health of the community. While it would obviously not be fair to put the whole blame for curtailment in a single department on the shoulders of a single minister, we have no hesitation in stating that if the minister and his colleagues knew more about the aims of preventive medicine and understood the possibilities attendant both on its practice and its neglect, they would direct more of their curtailments to departments other than that of health.

The League of Nations has taken up this subject, and in the June, 1933, issue of the *Quarterly Bulletin of the Health Organization* publishes a report "on the best methods of safeguarding the public health during the depression". The report is the work of a conference of experts convened jointly by the Health Organization and the International Labour Office. So that the report should not lose its topical interest, those compiling it have concentrated mainly on data regarding their respective countries. For the same reason it has been published before its approval by the Health Committee of the League of Nations. The experts attending the conference came from London, Paris, Berlin, Brussels, Belgrade and Prague. Though the report has not received the *imprimatur* of the Health Committee, it must be regarded as a document worthy of serious consideration. Reference is made to the diminution of sums of money provided for the protection of the public health by the State, by the communes and by voluntary subscription. It is pointed out that the reduction of money spent on health is often proportionately greater than on other items. Moreover, the money spent on social insurance, and in particular on sickness, invalidity and accident insurance, has decreased. The report goes on to state what every student of preventive medicine knows and what but few non-medical persons can be made to realize, that if it be true to say that the curing of disease is of the utmost importance to national economy, then

prevention must *a fortiori* be still more important, because it obviates not only the loss caused by disease, but also the expenditure necessary for its treatment. After this follow words that we should like to hear proclaimed throughout the length and breadth of the Commonwealth:

> From this twofold point of view, reduction of expenditure on preventive work should be avoided owing to its anti-economic character. On the contrary, in the interests of true economy, prevention should become to an increasing extent an integral part of health policy and should be developed by every means in the power of legislative bodies.

The recommendations of the committee are discussed under four headings: (i) Need for rational and complete organization of medical care, (ii) economy in prescription and treatment, (iii) essential sickness insurance benefits, (iv) rationalization of hospital services. The last mentioned may be left for discussion on a future occasion; it is a matter for hospital authorities as well as for the medical profession. The advisability of introducing essential sickness insurance benefits into Australia will not be discussed; it is doubtful whether such a national undertaking is necessary for Australia. The first two recommendations are important and their adoption would do much to further preventive medicine at the present time. The need for "rational and complete organization of medical care" not only calls for coordination between general practitioners, specialists, hospitals and other medical institutions, as the report states; it means, in some places in Australia at the present time, the provision of medical attention where none is available, and it means the succour of medical practitioners who are fighting a hopeless battle in communities whose members are entirely without means of earning a living. The authorities know the difficulties and are, to say the least of it, tardy in affording any relief. As far as economy in prescription and treatment are concerned, the report deals largely with those countries in which compulsory national insurance has been established. But general practitioners in Australia should remember that economy in prescribing does not mean that the patient will be prejudiced as far as his treatment is concerned. This is where medical practitioners and pharmacists can collaborate. Special reference is also made in the report to the elimination of secret remedies. The interesting statement is made that in the United States of America three times as much money is spent on secret remedies as is at the disposal of public and private health organizations. The suggestion that immediate action should be taken against secret remedies and quackery will be endorsed by every one who knows anything about preventive medicine.

The general conclusion is that if the public health services of Australia are maintained and even extended, as they should be, the cost of illness to the community as a whole and to the individual will be lessened. If people are not cared for, they will not be healthy; if they are not healthy they will, either directly or indirectly, be a burden on the State. There is nothing for it but to keep the standard of preventive measures up to what they were a year or two ago, and to extend them wherever the present exigencies may show that they are needed.

Current Comment.

LEPTOTHRIX INFECTIONS.

THE common bacterial invaders of the human body are so well known as being certain members of the lower microbic orders that the occasional importance of the higher groups is recognized with a certain degree of surprise. The pathogenic varieties of the streptothrix family are, of course, familiar, as also their affinities with the causal agent of tuberculosis, even though we may still defy the newer bacteriological terminology in calling the latter the tubercle "bacillus". Certain other mycobacterial forms are known occasionally to produce disease. Although it is not strictly relevant to the point at issue here, the connexion between the spores of moulds and inhalation asthma may also be mentioned. The leptothrix and cladothrix are generally considered to be of low pathenogenicity, but the literature contains numbers of case records illustrating the capacity of these forms as pathogens.

Such a case is that narrated by Paul N. Harris, who describes the course of a fatal infection in a young child due to a leptothrix.[1] The patient was a little girl of eleven years who had a protracted illness, extending over some five months. The nature of her ailment was in doubt throughout its whole course. The onset was gradual, with several weeks of fever following on initial chills, and the first

[1] *The American Journal of Pathology*, January, 1933.

definite localizing sign was the presence of ascites. This abdominal collection of fluid was withdrawn after the child had been ill for two months, and for a time her condition improved, but a month later a cough and large amounts of viscid sputum directed attention to her chest, where signs suggestive of abscess were found. Radiographic examination of the lungs, which previously yielded no evidence of pathological change, now confirmed the clinical diagnosis of lung abscess. No bacteriological or serological studies proved helpful, though no record of sputum examination is detailed. After nearly two months in hospital the child's condition was improving; the lung appeared to be healing, though ascitic fluid once more collected, and was removed. She was still febrile, but was removed from hospital and returned a week later, to die shortly after admission.

Autopsy revealed that the lung abscess had been caused by direct extension from an abscess in the liver, and though the lung was healing there were numerous other abscesses scattered through the substance of the liver. The pericardium had been infected in a similar manner, and contained purulent fluid. Radiograms taken during the illness had revealed an enlargement in the cardiac shadow, no doubt due to an exudative pericarditis.

That this condition was difficult to diagnose is not at all surprising. The most novel feature of the case, however, was the nature of the actual infective agent. Smears of the pus from the pericardium and the liver showed delicate Gram-negative filaments, some beaded, but none branching, and no other organisms were found. Accordingly, every effort was made to secure cultures of this filamentous organism, and after a number of failures anaerobic methods with fresh kidney tissue in the medium met with success. The leptothrix thus grown was carried through several subcultures, and abscesses containing the same organism were produced in guinea-pigs and rabbits by subcutaneous injection. Intravenous and intraperitoneal injections caused only transitory disturbances. This evidence seems to indicate that the leptothrix was the infective agent, and the author succeeded in culturing it. In this he was more skilful or fortunate than most other investigators, for the literature records few successes. The review of previously described cases which Harris gives in his paper shows that a similar organism has been considered responsible for various suppurative and ulcerative processes in different parts of the body. In one case a glomerulitis is described, and leptothrices have also been demonstrated in meningeal infections in a number of instances. It might be asked what is the importance of an unusual finding such as this. In such cases the doubt always arises if the condition is really so uncommon as is thought. Everyone must recall instances of bacterial infection in which immediate smear revealed no organism and where attempts at culture were fruitless. Of course, there are good reasons for this in many cases. The material may not be fresh, the organism may have died out or be sparsely scattered, but the possibility of an unusual pathogen should always be remembered.

The disadvantages of a purely routine examination are often seen, and one instance of this is not uncommon in connexion with the examination of sputum. From hospital pathology departments the report is often returned: "No tubercle bacilli found", or some more cautious equivalent is written. But if such information is inadequate, the fault is not that of the laboratory worker, but of the clinician, who so frequently fails to give adequate notes of his findings and, more important still, fails to indicate what is in his mind. Of course, there is no need for the practitioner to acquire that curious "uncommon disease complex" (one of the few as yet unexploited by the psychologist), but the open and inquiring mind helps to make the rough places of scientific progress a little smoother for those who tread that path.

PERTUSSIS IN OLD AGE.

In text books the occurrence of pertussis in old age receives little more than passing mention. Though old people are not often affected by this disease, the infection, when it does occur, is often very severe and not infrequently fatal. At a recent meeting of the Royal Society of Medicine, A. J. Hall, in reporting several cases occurring in old people, discussed *inter alia* the aspect of immunity.[1] He points out that cases in old people may be divided into two groups. The first includes those in which there has been a known attack in childhood; the second, those in which no definite information as to an attack in childhood is available. Of the patients in the second group, Hall points out that those who have had an attack have lost an acquired immunity. Those who have had no attacks in childhood either (i) have never at any time been immune and have escaped earlier in life from lack of exposure to infection, or (ii) they have been naturally immune throughout the greater part of childhood and adult life, but have lost their natural immunity in old age. It is the last mentioned group which is of the greatest interest, and one of Hall's cases exemplifies it very well. The patient was a medical practitioner, aged seventy-two years, who for many years had had wide experience of pertussis in one of his public appointments, extending over a period of forty years. The clinical importance of such a case is obvious. Hall adds that he has been unable to find any expression of opinion as to whether there is such a thing as natural immunity to pertussis, and, if there is, at what age it tends to disappear. The practical points arising from the views enunciated by Hall are that pertussis should be suspected when old people are attacked by paroxysmal cough of obscure origin, and that old people must not be allowed to come into contact with affected children.

[1] *Proceedings of the Royal Society of Medicine*, July, 1933.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Ephedrine Dermatoses.

E. W. ABRAMOWITZ AND M. H. NOUN (*The British Journal of Dermatology and Syphilis*, June, 1933), after reviewing the literature, report a further case of dermatitis due to sensitivity to the drug ephedrine. Nine definite case reports from various authors are cited. The types of lesions are erythematous and eczematous, followed by desquamation. The invariable situation of eruptions on the nose and lips, even though present on other parts of the body, pointed to local absorption followed by general dissemination through the circulation. Sensitization usually occurred soon after the use of the drug was started, but in one case it did not develop until after two years' use. The patch or contact test was of great aid in determining the specific sensitizing agent and establishing the cause of the eruption. The result was positive in those with eczematous lesions. The result of the scratch test was mostly positive in those with lesions of the erythema and urticarial groups. In the case reported the rash commenced after the use of ephedrine as an inhalant for the relief of a nasal catarrh. The rash appeared first on the back of the hand and face and spread to the entire skin. When the back cleared, a patch test with ephedrine inhalant (containing 1% of the natural alkaloid in mineral oil), epinephrine and liquid albolene were applied to separate areas. After twenty-four hours a definite erythema with vesiculation was apparent over the area where the ephedrine inhalant had been used.

The Trichophytin Test.

E. MUSKABLIT AND W. DIRECTOR (*Archives of Dermatology and Syphilology*, May, 1933) have described a method of preparation of a polyvalent fungous extract containing endo-products and exo-products of epidermophyton, trichophyton and microsporon. Three hundred and fifty patients were tested intradermally; of these three hundred were clinically mycotic and fifty were not mycotic. Non-specific reactions were observed in 4% of non-mycotic cases. The trichophytin test gave a positive reaction in 72% of those proved mycotic by the laboratory. Clinical diagnosis was more frequently corroborated by the test than by the laboratory examination, for in clinically mycotic cases the test was positive in 60%, while laboratory examination gave positive results in only 39%. Patients with highly inflammatory lesions gave a higher percentage of positive results. The test gave a positive result in cases in which the infection was due to various fungi of human and animal types, particularly in those caused by *epidermophyton interdigitale*. Monilia infections of the skin also gave a positive reaction, but less frequently than cases due to the higher forms.

The Use of Extract of Spleen in Certain Dermatoses.

M. S. WIEN AND M. O. PERLSTEIN (*Archives of Dermatology and Syphilology*, June, 1933) have given the results of investigations in a series of fifty cases treated with spleen extract. Following the observation that splenectomy is associated with an eosinophilia which is frequently observed in skin conditions, twenty-five patients suffering from eczema and from seborrhœic dermatitis infections, eczematoid dermatitis, hypostatic eczema, several forms of nondescript dermatitis and secondary toxic exfoliative dermatitis were treated by this method. One of the patients in the last mentioned group showed a rapid response. This patient had a generalized exfoliative dermatitis following a rash with the configuration of *pityriasis rosea*. He appeared in great distress from pruritus and chilliness. He was given seven daily injections of two cubic centimetres of 500% spleen extract. There was complete involution of the exfoliative dermatitis, only the original rash being left. The results obtained with a purified aqueous extract of hog spleen indicate that it is of distinct value in urticaria, *dermatitis herpetiformis*, and secondary toxic exfoliative dermatitis. The results in eczema were merely some alleviation of certain subjective sensations, such as itching. There was a slight increase in serum calcium and a diminution in eosinophile cells after the injection of spleen, with prompt return to the previous level within twenty-four to thirty-six hours after treatment, which must be prolonged with injections approximating ten grammes of spleen substance at each injection.

Fixed Phenolphthalein Eruptions.

F. WISE AND M. B. SULZBERGER (*Archives of Dermatology and Syphilology*, April, 1933), in an experimental study, have attempted to throw light on the question of the exact seat of hypersensitiveness in fixed phenolphthalein eruptions, more particularly to ascertain whether the epidermis or superficial cutis or both are the sensitive or shock tissue. Cutaneous tests performed on both affected and unaffected sites in patients with fixed lesions and on normal controls did not reveal any definite demonstrable hypersensitiveness of the skin. The patch test reactions and wheal reactions were as in normal persons, whereas the later papular reaction to intradermal tests seemed slightly increased. In the second experiment affected skin was transplanted to a normal site and normal skin was transplanted to an affected site. After complete healing phenolphthalein was administered by mouth. Contrary to the results reported by Naegeli, the normal skin reacted in a typical manner and the affected skin grafted on the normal skin remained unaffected. These experiments rather favour a theory of regional hypersensitiveness dependent on deeper structures. Attention is called to the fact that the drug may be ingested in various ways (laxative preparations, pink mouth washes, tooth pastes, sodium perborate preparations, and even icings on cakes) by highly sensitive subjects.

UROLOGY.

Hypotonia of the Upper Urinary Tract.

K. HUTTER (*Zeitschrift für Urologie*, December, 1932) discusses the importance of the pyelographic and ureterographic sign, which he calls the *Psoasrandsymptom* (psoas-border-symptom). This consists, in the cystoscopic pyelogram, of a narrowing of the medial side of the renal pelvis or upper portion of the ureter, by pressure from lying against or passing over the thick lateral border of the psoas muscle. Together with this sign are often observed varying widths in different portions of the ureter, and failure of filling in certain portions; sometimes the ureter appears to be twisted or looped. These signs point to hypotonia of the upper urinary tract. The psoas-border-symptom is masked when too great a quantity of contrast substance is injected. On the other hand, it is brought out more clearly on descent of the kidney in deep inspiration and during the progress of distinct diuresis.

Electro-Coagulation in Urinary Incontinence in the Female.

B. SUBOTZKY (*Zeitschrift für Urologie*, December, 1932) describes a simple method of relieving partial urinary incontinence in the female. A long and fairly deep line of coagulation is made in the middle line of the bladder outlet posteriorly and along two other lines situated at an angle of 45° from the median line. The method is particularly indicated where enough muscle elements remain to allow the patient normal retention of her urine in the recumbent position. Complete cure or improvement is not to be expected before six weeks after the coagulation, and the effect is due to scar contraction after the coagulation.

Vesical Dysfunction in Children.

UROLOGIC studies of retention and incontinence of urine in children have been made by C. K. Smith and L. R. Engel (*Journal of Urology*, December, 1932). A certain number of these are due to neurological causes. The authors conclude that normal bladder function depends on the maintenance of a sympathetic-parasympathetic balance. The parasympathetic is capable of carrying on independently, the sympathetic having only a brake-like action on the sphincter. Diagnosis resolves itself into three questions: (a) Is retention due to anatomical obstruction or defective innervation? This is determined by

cystoscopy or cystography. (*b*) Is incontinence false or true? (*c*) Which part of the vegetative system is involved? Experience points to the parasympathetic as being usually at fault. In retention the brake-like action of the sympathetic is in control of the sphincter; in incontinence inherent muscular tone is absent, due to defective parasympathetic supply. Treatment is essentially surgical. Patients may require: (*a*) Correction of nerve impingement due to spinal fusional defects. (*b*) Reinforcement of sphincter control by plastic operation on the bladder neck. (This procedure has been found to be futile when the filling sense is wanting.) (*c*) Presacral sympathectomy.

Causes of Death in Genito-Urinary Disease.

D. W. MACKENZIE AND M. I. SENG (*Journal of Urology*, March, 1933) have made a comprehensive study of all deaths in the urological department of the Royal Victoria Hospital, Montreal, over a period of fifteen years. There were 265 deaths among slightly more than 11,000 patients admitted to hospital, that is, a general mortality rate of 2·39%. In the same period 5,064 major operations were performed, with 187 operative deaths —an operative mortality of 3·69%. Pathological lesions in the genito-urinary tract itself were of sufficient gravity to be the chief cause of death in less than one-third of the fatal cases, while cardio-vascular and respiratory tract lesions were together responsible for a little more than one-third of the deaths. The authors concluded that all cardio-vascular lesions are grave conditions when serious urinary tract disease is present; also that inflammatory lesions of the pulmonary system are always a serious threat and make up fully 10% of the deaths; that infection, whether in the urinary tract or outside it, is a most serious complication. Nearly two-thirds of all deaths occurred in surgical diseases of the kidneys and prostate gland. Thirty-six *per centum* of all the deaths occurred in prostatic diseases, but the actual mortality rate was comparatively low; the total number of patients (1,638) with prostatism (adenoma, median vesical bar, contracture of the bladder neck *et cetera*) admitted to hospital was very high when compared with any other section. New growths of the genito-urinary system resulted in about one-quarter of the deaths and gave a mortality rate of about 9%.

Experimental Production of Urinary Calculi.

C. C. HIGGINS (*Journal of Urology*, February, 1933) comments on the variation in frequency of urinary calculus formation in various countries and even in different districts of the same country, and note further that for some years past a definite relationship between faulty diet and calculus production has been presumed. As an outstanding example may be adduced the remarkable decrease in vesical calculi in children in England and France during this century, whereas fifty years ago about one-half of all cases occurred in children. Russia, however, has not shown such improvement, so there can be little doubt that advances in nutrition and in hygiene have a beneficial effect in this regard. In the author's experiments 200 albino rats were put on a diet deficient in vitamin *A*; twenty-five animals were used as controls. At the end of 200 days 88% of the rats on deficient diet had urinary calculi; none of the controls had urinary calculi. Infection of the bladder did not occur until the special diet had been administered for at least thirty days; renal infection not until sixty days or more. Parallel with the calculus appearance, renal stones appear later than vesical. At the end of 250 days renal calculi were found at autopsy in 41% of the rats. Similar series of experiments were done with vitamins *B*, *C* and *D* eliminated from the diet, but calculus formation did not occur in any of these animals. As a rule, in the earlier stages of the experiments, calculi occurred more frequently than infection, but in the later stages infection and calculi occurred with about the same frequency. It is the author's impression that, with the long-standing alkalinuria produced on a diet deficient in vitamin *A*, the crystalloids are constantly increased in the urine to a point where the protective action of the true colloids is not sufficient and calculi begin to form. This mechanism, combined with infection of the urinary tract, which so often arises, leads to rapid enlargement of the calculi.

Endoscopic Prostatic Resection.

B. LEWIS AND G. CARROLL (*Urologic and Cutaneous Review*, January, 1933) criticize the results obtained in electric resection of the prostate, an endoscopic method which has created much excitement among American urologists during the past couple of years. They have made a careful study of their own cases and have asked various competent urologists in the United States of America to send them impressions of their experiences. After this study they make a most emphatic protest against representation of this operation as a minor procedure. Pre-operative treatment should be just as careful and painstaking as with actual prostatectomy and, especially where sepsis is feared, this pre-operative treatment should include cystostomy. They refer particularly to the difficulty of controlling hæmorrhage after the electro-cutting loop has removed a piece of tissue; electro-coagulation, applied immediately, will usually control hæmorrhage, but occasionally it is necessary to open the bladder and control the bleeding by a hæmostatic bag or other means. The authors, while according an important position to the new procedure in selected cases, deny that it has reached such a state of perfection that it will supplant prostatectomy. They quote the recently published statistics of N. G. Alcock, who had the alarming mortality rate of 24% in his first fifty cases, even though he is a highly competent endoscopic operator. The same operator has informed the authors in a later verbal report that his mortality rate in the first seventy-five cases performed was 20%, but since the first seventy-five cases he has lost about one patient in every twenty-five. It is therefore to be expected by anyone, even if competent, who embarks on prostatic resection with technique available at present, that an alarming percentage of patients will have to pay for his experience.

Conservative Treatment of Hydronephrosis.

W. WALTERS (*Journal of Urology*, February, 1933) states that in the presence of sufficiently functioning renal parenchyma complete removal of the obstructing factors which produce the hydronephrosis should be followed by reduction of the size of pelvis and calyces to proportions approximating the normal. Partial resection of the dilated pelvis may be a very satisfactory operation, especially if it is so planned that the uretero-pelvic orifice comes to lie in a dependent instead of a high position. In two cases of extensive bilateral hydronephrosis with infection, partial resection of the pelves secured excellent results, and the good effect has lasted in one case for three and a half years, and in the other for two years. Uretero-pyelo-neostomy has relieved over a period of almost four years a hydronephrosis in a solitary kidney in which obstruction was complete at the time of operation. If one chooses to reimplant the ureter into a dependent part of the renal pelvis, a very accurate anastomosis should be made, for if only a small length of ureter projects into the cavity of the pelvis it may act as an obstructing valve.

Ureteric Calculi.

A. RAVICH (*Journal of Urology*, February, 1933) states that in all the ætiological theories that have been advanced, urinary stasis seems to be the only constant factor necessary for stone formation in the urinary passages. Calculi seem to form when, as a result of urinary stagnation, some change occurs in the secretory function of the tubular epithelium, causing coalescence or diminution of the protective colloids and consequent precipitation of the unattached crystalloids. Of 758 cases studied by the author, about 70% were in males. The radiogram was positive in about 90% of cases and most of the remainder were diagnosed by the wax-tip catheter, which is considered an important diagnostic measure. Six *per centum* of patients passed the calculi spontaneously; 84% were successfully treated by cystoscopic manipulation, and 10% required operation; there was no death in the operation cases. Recurrence was noted in 4% of cases, chiefly in patients who refused follow-up treatment by ureteric dilatation.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at Mooroopna Hospital, Mooroopna, on May 20, 1933, DR. W. G. D. UPJOHN, the President, in the chair.

Diagnosis and Treatment.

DR. LESLIE HURLEY read a paper entitled: "Some Remarks on Diagnosis and Treatment" (see page 333).

DR. S. F. SUTHERLAND referred to a patient who developed a right pleural effusion about the sixth month of pregnancy following on lesions of the shins resembling *erythema nodosum*, and asked whether she should be regarded as tuberculous. The pleural effusion cleared up slowly after about six weeks and the patient seemed in fair general health. Dr. Sutherland was anxious as to the possible effects of labour and suckling.

DR. A. P. DERHAM said that he was filled with admiration of the clarity and completeness of Dr. Hurley's remarks, and it was very difficult to amplify them and just as difficult to criticize. In his preliminary remarks Dr. Hurley had raised one point which was worth fuller discussion. He had referred to the taking of diagnostic throat swabs in cases of diphtheria as being useless or worse than useless from the therapeutic point of view. Dr. Derham agreed with this and quoted several cases he had seen during the last few weeks illustrating the point. Nevertheless, there were types of diphtheria in which bacteriological investigation was essential to a correct diagnosis and sometimes to proper treatment. Cases of chronic nasal diphtheria with an anterior nasal discharge could be diagnosed with certainty only by swabbing, and cases of slowly progressive laryngeal diphtheria without membrane on the throat were sometimes puzzling; and although, of course, one gave antitoxin when in doubt, a swab was often very helpful in confirming the diagnosis. With regard to Dr. Hurley's concise description of the problems arising in simple pleural effusion, Dr. Derham said that he had found these remarks very helpful, as they illustrated almost all the points arising in the case of a young man under his care at the present time, and Dr. Hurley's recommendations as to treatment were fully suported by the results attained in the case of this patient.

DR. C. H. DICKSON asked if small doses of copper were helpful in the treatment of microcytic anæmia.

DR. R. W. NICHOLLS asked if the iron and ammonium citrate mixture were as efficient as Blaud's pill, as in adequate doses it might be less expensive.

DR. F. W. GRÜTZNER cited several cases of severe pneumonia in which digitalis in adequate doses had been apparently the means of saving the patient's life.

Regarding the efficacy of "Coramine", Dr. Dickson said he had been called to see a patient who was an elderly epileptic and who had had a severe fit and was thought to be dying. On his (Dr. Dickson's) arrival, to all appearances the man was dead. He was cyanosed, not breathing and pulseless. Dr. Dickson injected two cubic centimetres of "Coramine" intramuscularly, followed this by artificial respiration, and the patient recovered. It might be argued that, being in an epileptic fit, the patient would have recovered without the "Coramine", but the appearances did not suggest it.

DR. E. KIRSNER, referring to the value of swab examinations in cases of suspicious diphtheria, said that in isolated country towns it was very difficult to know what to do in these suspicious cases. The difficulty of getting reports on swab cultures made it impracticable to wait for results, and one was faced with the alternative of giving antitoxin and then adhering to the diagnosis of diphtheria, whatever the result, or alternatively, in less suspicious cases, of withholding antitoxin and running the slight risk entailed by this course of action. He agreed with Dr. Nicholls that the use of Blaud's pill in anæmia involved the question of expense to the patient, as pharmacists charged a flat rate per hundred pills, and he thought that if equally effective, iron, given in the form of a liquid prescription, would be cheaper for the patient.

DR. W. N. DAVIES said that in his student days at the Melbourne Hospital it had seemed that every third patient had chlorosis, and it was difficult to explain why this disease had become apparently so much less common.

DR. VICTOR HURLEY supported Dr. Leslie Hurley's appeal for the taking of careful and thorough histories in investigating medical and surgical problems. The ability to take an adequate history required many years of patient practice, experience and knowledge. Referring to pleural effusions, Dr. Hurley said that when these were sero-purulent, it was a matter of judgement to decide at what stage to institute surgical interference. The serum often became more and more purulent on repeated aspirations, and difficulty sometimes arose in withdrawing it through an ordinary exploring needle. Sometimes, although present, no pus was obtained on attempting aspiration, and one had to diagnose its presence from the offensive odour on the end of the needle when withdrawn. This difficulty in withdrawing pus did not seem to be always due to its viscosity alone, but some other factor seemed to operate, sometimes, possibly, a negative pressure in the pleural cavity. Dr. Hurley also said he was sure that the condition of intradural hæmorrhage was more common than extradural hæmorrhage. Cushing had described as typical a greenish discoloration of the *dura mater* before it was opened in trephine cases, when intradural hæmorrhage was present.

In reply, Dr. Leslie Hurley said that in his experience most of the tragedies of undiagnosed diphtheria had been due to posterior nasal diphtheria missed by lack of sufficiently thorough clinical examination. It was obvious that all cases of suspected laryngeal diphtheria should be treated as such unless it could be proved otherwise.

In regard to the nature of *erythema nodosum*, Dr. Hurley said that its ætiology was uncertain, but some cases were associated with tuberculosis, though not necessarily caused by it. He thought that the patient described by Dr. Sutherland should be treated as convalescent from tuberculosis with all the necessary precautions.

In reply to Dr. Dickson, Dr. Hurley said he had no experience of the use of copper in anæmia. The combination of iron and ammonium citrate in chlorotic anæmia was effective in large doses of thirty grains thrice daily, but not in smaller doses. In pneumonia Dr. Hurley thought digitalis was useful in small doses of ten minims thrice daily from the beginning of the illness, although even on this point opinions continued to differ. He had no doubt that "Coramine" was a strong respiratory stimulant, but there was no reliable evidence that it was a cardiac stimulant.

In regard to Dr. Victor Hurley's remarks about the occasional difficulty of aspirating purulent pleural effusions, Fishberg had reported that it was sometimes helpful to introduce a small amount of air into the pleural cavity before attempting to aspirate the fluid.

Hyoscine in Labour.

DR. S. F. SUTHERLAND read a paper entitled: "Hyoscine in Labour" (see page 338).

DR. W. E. BRUNSKILL asked Dr. Sutherland if he had ever tried the administration of hyoscine and morphine by nasal inhalation of the powder in patients who objected to hyperdermic injections. Dr. Brunskill quoted the case of a patient of his own that illustrated the value of hyoscine in labour. A nervous and alarmed *primipara* in labour had been quite uncontrollable by ordinary methods of persuasion and had got herself into a position on the floor from which she could not be moved by her attendants. Repeated injections of hyoscine on the lines described by Dr. Sutherland had quietened her considerably and allowed her to be confined in bed without further difficulty and without her having any unpleasant memories of the experience.

Several members congratulated Dr. Sutherland on the originality of his paper and said that it was practical work of this sort which represented the most valuable kind of contribution to scientific meetings.

Clinical Cases.

Clinical demonstrations were given by members of the honorary medical staff of the Mooroopna Hospital. It is hoped that some of these cases will be reported in a subsequent issue.

In closing the meeting, the President, Dr. Upjohn, congratulated the members of the Goulburn Subdivision on the excellent nature of the clinical material and its method of presentation at the meeting, and also congratulated Dr. Sutherland on the value of his contribution.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Gammie, Charlotte Isabella, M.B., B.S., 1928 (Univ. Sydney), The Women's Hospital, Crown Street, Surry Hills.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Johnston, John, M.B., C.M., M.D., D.P.H., 1882 (Glasgow), 15, Lynedoch Avenue, St. Kilda, S.2.

Hallows, Gladys Isabel, M.B., B.S., 1932 (Univ. Melbourne), Queen Victoria Hospital, Melbourne, C.1.

Australasian Medical Publishing Company, Limited.

ANNUAL MEETING.

THE ANNUAL MEETING of the Australasian Medical Publishing Company, Limited, was held at The Printing House, Seamer Street, Glebe, on August 30, 1933, DR. T. W. LIPSCOMB, the Chairman, in the chair.

Directors' Report.

The Directors' report was presented as follows:

The Directors submit their report for the past year, and the balance sheet as at June 30, 1933, together with the profit and loss account for the twelve months ended June 30, 1933.

In September, 1932, a bronze tablet was erected at The Printing House as a memorial to the late Dr. Robert Henry Todd, Secretary of the Company, who died on December 14, 1931. A copy of his obituary notice, reprinted from THE MEDICAL JOURNAL OF AUSTRALIA, was sealed in a container and placed behind the tablet.

THE MEDICAL JOURNAL OF AUSTRALIA continues to gain in popularity and retains its position as a scientific publication.

There has been an increase in volume in the turnover of the printing and publishing department, despite the intense competition, and the Company again shows a small surplus for the twelve months, after allowance has been made for debenture interest. It is pleasing to mention here that the Company has now gained a fairly wide reputation for the first class quality and high standard of its printing.

At a meeting of Directors held in Melbourne on March 7, 1933, it was decided to approach the holders of Debentures Series "B", "C" and "C2" issued by the Company, and ascertain if they would be willing to accept debentures bearing interest at the rate of 5% *per annum* in lieu of the unpaid interest, and, at the same time, agree to a reduction in interest to 5% *per annum* on their present holdings of debentures. Negotiations to give effect to this proposal are proceeding.

The Directors have pleasure in authorizing the payment of a portion of the arrears of debenture interest, and, should the before-mentioned proposal be finalized, the whole of the interest on debentures will be cleared up to June 30, 1933.

The Branches have been notified that, after the receipt of subscriptions for THE MEDICAL JOURNAL OF AUSTRALIA for the year 1933, the 1923 bank overdraft of £5,000 will be liquidated.

Dr. Gregory Sprott and Dr. D. D. Paton retire from office by rotation, in accordance with the Articles of Association (Article 39). They are eligible and present themselves for reelection.

T. W. LIPSCOMB,
Chairman.

Election of Directors.

Dr. Gregory Sprott and Dr. D. D. Paton were reelected to the Board of Directors.

Correspondence.

THE TREATMENT OF ECLAMPSIA.

SIR: Professor Windeyer's interesting article on the treatment of eclampsia, and his reluctant putting aside of ætiology, inspires me to dwell on my assumptions as to the causation of eclampsia, as, if accepted, they have much bearing on the preventive and the after-treatment of eclampsia.

I regard eclampsia as a complication of pyelitis and treat it as such. When one considers the common experiences of ante-natal care, the prevalence of traces of albumin, with and without pain in back or sides, with or without tenderness on bimanual pressure of kidneys; of heavy albumin, with or without œdema, with or without rising blood pressure; of febrile pyelitis; of preeclamptic conditions; the frequency of finding casts in the catheter urine withdrawn before applying forceps; and the occasional occurrence of a frank eclamptic attack; it seems to me impossible to draw any other conclusion. Such conditions probably arise from a focal sepsis, more particularly from dental sepses. The liability to rises of temperature after labour, anywhere from the fourth to the seventh or the eleventh day (in one patient the sixteenth day) is noticeable in all the conditions mentioned above; most of these puerperal fevers are really pyelitic fevers.

Those who agree with these ideas will find that the use of potassium citrate mixtures during pregnancy (in some few instances urotropine and sodium benzoate are better) and ordinary diet are most successful. I never put my patients, however œdematous and albuminuric, on to milk diet, but allow them a generous diet, according to appetite, cutting off only condiments, fried and preserved foods. Where œdema develops, bowel wash-outs are ordered, but only if obviously ill is the patient sent to bed.

After labour the liability to pyelitic fever is combated by early preventive doses of potassium citrate; if handling during labour has been so great as to suggest the possibility of a carried infection, then intensive vitamin treatment is given from the first day. "Adexolin" or "Radiostoleum" or "Halivol", one teaspoonful three times a day, is the usual treatment, the object being to raise resistance to infection.

My experience of frank eclampsia is small, but other albuminuric or œdematous conditions have come sufficiently frequently under my view for me to feel able to assure the general practitioner that treatment as suggested above will give his patients better babies, better recoveries and, I fancy, even better labours, though I must confess that so far I have found the control of the first stage of

labour beyond my ante-natal treatment. However, an albuminuric labour can be very efficient. My theory of obstetrics deals much more fully with pyelitis and its important place in the management of child-bearing.

Yours, etc.,

MARY C. DE GARIS.

Geelong,
August 15, 1933.

THE PROBLEM OF GASTRIC CARCINOMA.

SIR: In reference to the recent letters of "Pathologist" and Mr. Rutherford Darling on the occult blood test. Some years ago, at the Launceston General Hospital, we carried out a number of experiments on this test, using the benzidine technique as described in "Hutchison and Rainey". The subjects of the test were patients who, as far as we knew, had nothing wrong with their gastro-intestinal tracts, for example, young men with fractures. It was found that the fæces of a good number of these patients gave a positive reaction to the test. When they were taken off meat and green vegetables for three days they no longer gave positive reactions.

About eighteen months ago my attention was drawn to the article by Ogilvie, mentioned by Mr. Rutherford Darling. I then got Dr. Richards, of the Commonwealth Health Laboratory, to repeat the experiments, using Gregersen's technique. We got the same results as before.

Incidentally Dr. Richards found that the Gregersen test was more delicate than the benzidine. We came to the conclusion that the test for occult blood was misleading unless the patient had been taken off meat and green vegetables for three days.

The test is a highly significant one, and it is important that its technique should be clearly established.

I have asked Dr. Grove, the Superintendent of the General Hospital, to carry out a number of independent experiments. Perhaps Mr. Rutherford Darling would arrange a similar series.

Yours, etc.,

C. CRAIG.

Brisbane Street,
Launceston,
August 18, 1933.

SIR: Whilst legitimate criticism is always helpful and merits a thoughtful and dignified reply, there is a considerable element of doubt as to whether the contributions by your anonymous correspondent, "Pathologist", fall into the above category.

One sentence in my article, "The Problem of Gastric Carcinoma", to which exception has been taken, reads: "This test is extremely simple, and may be carried out by anybody possessing an elementary knowledge of chemistry".

Although "Pathologist" has inaccurately transcribed the context into "The test for occult blood *et cetera*", one presumes his criticisms are directed solely towards Gregersen's modification and to no other variation of the benzidine test.

As two quotations from G. A. Harrison's text book on "Chemical Clinical Methods" appear in his communication of August 14, why is it that further quotations from the same source having direct and specific reference to the above test are omitted?

Instead of culling varied statements in connexion with "colour reaction tests" in general, may I call upon him to uphold his principles "to make a contribution to scientific knowledge" by proving through scientific and logical methods that the conclusion of Dr. A. G. Ogilvie, "a blue or blue-green colour with Gregersen's test, obtained before thirty seconds, is proof positive of the presence of occult blood in the stools, irrespective of the patient's diet", is faulty or erroneous?

"Pathologist" states that the above test "will lead to many a fallacious finding unless the test is done after forty-eight hours of meat-free dieting and at least twenty-four hours' diet free of green vegetables". The proofs of his contention that on the customary diet of the patient Gregersen's test yields fallacious findings are therefore earnestly requested.

Until this be forthcoming I would direct the attention of the "younger members of the profession" to a contribution towards the discussion on the early recognition and treatment of cancer of the stomach delivered at the International Congress on Cancer on July 20, 1928, by Dr. Edmund Spriggs, of Ruthin Castle, who stated:

> A disadvantage of the usual benzidine test is that it is oversensitive for clinical use, giving a positive reaction with traces of blood which are too small to be significant.
>
> Since July, 1927, my colleague, A. J. Leigh, has used Gregersen's modification of the test as described by Ogilvie . . . .
>
> This method has proved of more value to us than the former one, in which a boiled fæcal emulsion and a saturated solution of benzidine in acetic acid were used. Thus of two hundred different samples of fæces tested by both methods, 43% gave positive, 27% negative, and 30% doubtful results with the older method, whereas with Gregersen's technique 15% only gave positive and the rest (85%) negative results.

As a technique on the lines of that of Dr. A. G. Ogilvie has been almost universally adopted by the pathologists of the metropolis and no further objections have been raised, your correspondent's position appears to simulate that of the proud old mother who, when watching her son's regiment march past, remarked: "They're a' oot o' step but oor Alf."

Yours, etc.,

H. RUTHERFORD DARLING.

229, Macquarie Street,
Sydney,
August 28, 1933.

MEDICAL BENEVOLENCE.

SIR: I have been away for some weeks or I would have written to you to thank Dr. Lipscomb for his letter in THE MEDICAL JOURNAL OF AUSTRALIA of the twelfth instant.

It is really a serious and a sad fact that our Medical Benevolent Association in this State is so neglected. It must surely be due to ignorance of the forlorn state of many widows of departed medical men.

We all should recognize the necessity of rectifying this condition of affairs at once, and no doubt many of us know personally of some of these cases, the result of sickness and other forms of misfortune. Those who have not before subscribed, do so now, and those who have might give a hint to any brother medical man who requires it.

Yours, etc.,

J. COLMAN WOODS.

Victoria Avenue,
Chatswood,
New South Wales,
August 28, 1933.

THE TONSIL PROBLEM.

SIR: As it seems impossible to convey my meaning and technique in a small compass, and people miss or won't read back numbers of the journal, I have decided to publish a small pamphlet which, I hope, will set out my position fully. Various correspondents please take note.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street,
Melbourne.
Undated.

Obituary.

WENTWORTH ROWLAND MAINWARING.

DR. BRONTE SMEATON has kindly forwarded the following appreciation of the late Dr. Wentworth Rowland Mainwaring.

Wentworth Rowland Cavenagh Mainwaring was born in Adelaide in 1869. He was educated at Saint Peter's College and the Adelaide University. He was a most brilliant student and throughout his school and university days always headed the list in examinations, no matter what the subject might be.

After graduation as M.B., B.S. (Adelaide) he attended the surgical practice of the London Hospital and gained the Fellowship of the Royal College of Surgeons. On his return to Adelaide his ability and knowledge were recognized by his fellows, and his advice and help were sought by many much senior to him. He acted as Honorary Secretary to the South Australian Branch of the British Medical Association and of the Medical Defence Association; his capacity for thinking accurately and promptly made him a valuable member of the Council. He was appointed honorary assistant surgeon to the Adelaide Hospital in 1900 and was made a full surgeon in 1919. His teaching at the hospital was valued very highly. At the university on several occasions he performed the duties of Professor Watson (Professor of Anatomy) during long periods on leave. He was the first to fill the position of Lecturer in Pathology, and for eight years he was the Lecturer in Surgery. An impressive and attractive style made his teaching very valuable, based as it was on a profound knowledge of his subjects. It is difficult to speak of Mainwaring's war record temperately, so highly is it judged by those best acquainted with it. He enlisted immediately on the declaration of war for any service without reservation or consideration of his civil professional status. He left as medical officer with the Third Light Horse and, despite prolonged illness and the reproaches of his friends, he insisted on staying with the regiment throughout the campaign on Gallipoli and in Egypt. The admiration of all ranks for him was intense; tales of his unsparing devotion, his indifference to death and danger, and his determination to serve the regiment are evoked by any mention of his name. When the Light Horse went to Palestine, Mainwaring was appointed Surgical Specialist to the Second Stationary Hospital at El Arish, and other positions. It was, however, as regimental officer that his heroic disregard of his own life and health won the love and admiration of the Third Light Horse.

Mainwaring entered life with great intellectual gifts—a marvellous memory and a capacity for thinking clearly and making sound judgements. His temperament made him a most lovable friend; he was cheerful, kind and gentle. He seemed incapable of bitterness and enmity, and bore slights and injuries without resentment; he possessed a rare sweetness of disposition. Never have I heard his honour impeached.

A straight eye made games and shooting easy for him, as his intellect made his work easy. Given a greater intensity of purpose he might have reached almost any heights of achievement he chose. He died unmarried, after three days' illness, of hæmorrhage from a peptic ulcer, and left many who will for long deplore his absence.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on August 14, 1933.

The following appointments were approved: Dr. F. W. Niesche as half-time Lecturer and Demonstrator in Anatomy; Dr. P. D. Braddon and Dr. V. J. Kinsella as part-time Demonstrators in Anatomy; Dr. W. E. Roberts and Dr. H. M. Rennie as Honorary Demonstrators in Anatomy.

Mr. E. V. Steel, B.A., was appointed, as from January 1, 1934, to the position of Assistant Librarian in the Fisher Library, and was also appointed Acting Librarian in 1934 during the absence on leave of the Librarian.

The Australian National Research Council advised that it had decided to found a medal, to be known as "The Thomas Ranken Lyle Medal", for award to the living author of such researches in mathematics and physics as might appear to the Council, on the advice of the University authorities, most deserving of the honour.

A gift was received with grateful thanks from the Consul-General for China of copies of booklets published by the Department of Intelligence of the Central Government of China.

It was decided to invite applications for the vacant chair of anthropology, the tenure to be limited to a period of five years.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

THE undermentioned have been registered according to the provisions of the *Medical Act*, 1912 and 1915, of New South Wales, as duly qualified medical practitioners:

Bothroyd, John Strahan, M.B., B.S., 1927, M.D., 1931 (Univ. Melbourne).

Brent, Richard Hillier, M.B., B.S., 1933 (Univ. Sydney), Saint Vincent's Hospital, Sydney.

Drummond, Malcolm Thomas, M.B., B.S., 1933 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

Gordon, Neil Acheson, M.B., 1933 (Univ. Sydney), Sydney Hospital, Sydney.

Kingsley, John, M.B., 1933 (Univ. Sydney), Parramatta Hospital, Parramatta.

Lowe, Jack West, M.B., B.S., 1933 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Millard, Philip Thornton, M.B., 1933 (Univ. Sydney), Saint Vincent's Hospital, Sydney.

Smith, Lionel Irwin, M.B., 1933 (Univ. Sydney), Western Suburbs Hospital, Croydon.

Additional diplomas registered:

Dowling, Donald Augustus, D.P.H., 1933 (Univ. Sydney).

Dunn, Talbot Lewis, D.P.H., 1933 (Univ. Sydney).

Books Received.

CLIO MEDICA: A SERIES OF PRIMERS ON THE HISTORY OF MEDICINE. X. NUTRITION, by G. Lusk, Sc.D., M.D., LL.D.; 1933. New York: Paul B. Hoeber. Fooiscap 8vo., pp. 153, with illustrations. Price: $1.50 net.

LES SOURCES DE LA VIE, by Serge Voronoff; 1933. Paris: Fasquelle Editeurs. Demy 8vo., pp. 184. Price: 15 francs.

A TEXT-BOOK OF NEUROPATHOLOGY, by A. Weil, M.D.; 1933. Philadelphia: Lea and Febiger. Medium 8vo., pp. 335, with illustrations. Price: $5.00 net.

SOME THOUGHTS ON ASTHMA, by A. J. D. Cameron, M.B., Ch.B., with foreword by K. Playfair, M.A., M.B., B.Ch., M.R.C.P.; 1933. Bristol: John Wright and Sons, Limited. Crown 8vo., pp. 136. Price: 7s. 6d. net.

PULMONARY TUBERCULOSIS: MEDICAL AND SURGICAL TREATMENT, by H. M. Davies, M.A., M.D., M.Ch., F.R.C.S.; 1933. London: Cassell and Company, Limited. Demy 8vo., pp. 471, with illustrations. Price: 27s. 6d. net.

THE DIGESTIVE TRACT: A RADIOLOGICAL STUDY OF ITS ANATOMY, PHYSIOLOGY AND PATHOLOGY, by A. E. Barclay, O.B.E., M.A., M.D., D.M.R.E.; 1933. London: Cambridge University Press. Crown 4to., pp. 423, with illustrations. Price: 36s. net.

PHYSICS FOR MEDICAL STUDENTS: A SUPPLEMENTARY TEXT BOOK, by J. S. Rogers, B.A., M.Sc., F.Inst.P.; edited by T. H. Laby, F.R.S.; 1933. Melbourne: Melbourne University Press in association with Oxford University Press. Demy 8vo., pp. 215, with illustrations. Price: 11s. 6d. net.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", page xiv.

HOBART PUBLIC HOSPITAL, HOBART, TASMANIA: Junior Resident Medical Officers.

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officers.

ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY, NEW SOUTH WALES: Honorary Officers.

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Honorary Officers.

VICTORIAN EYE AND EAR HOSPITAL, MELBOURNE, VICTORIA: Resident Surgeons.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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